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# Modeling the Creation of Actionable Knowledge within a Joint Task Force Command System *(Project GNOSIS)*

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**Air Force Research Laboratory**
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The conceptual and software architecture for an organizational sensemaking toolkit was successfully completed, satisfying the development goal of this SBIR effort. The toolkit enables an analyst to examine how an organization, a body of collaborating individuals operating in different roles, accomplishes sensemaking during the course of developing the organizational product. The analyst can manipulate various variables to ascertain what knowledge is created and how it impacts operational performance of the organization. The sensemaking toolkit was exercised in the context of a Joint Task Force organization using an effects-based operational process. Two parametric studies were performed. One study illustrated how differences in the contextual knowledge level of individuals in senior positions can impact organizational knowledge creation and its impact on operational products. The second study illustrated how differences in 'social currency' of key staff positions impacts knowledge creation in product development and how this impacts the operational product.

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# EXECUTIVE SUMMARY

*Project Gnosis was a two-year research and development effort undertaken by Evidence Based Research Incorporated to build a simulation model of the knowledge creation process within a future Joint Task Force (JTF) command system. A unique aspect of this model is its explicit representation of the hierarchical knowledge state created by the JTF planning rhythm. The foundation of this knowledge state is a set of strategic objectives issued by National Command Authorities. Through a succession of simulated knowledge creation tasks, these objectives are decomposed into several levels of actionable knowledge, including desired strategic endstates, centers of gravity, supporting functional elements, and—finally—a prioritized set of node mission packages to be executed by the subordinate component commands. This knowledge state can potentially include thousands of associated knowledge elements representing an operational scenario. These knowledge elements correspond to the information that would be contained in such products as the Commander's Guidance Statement, Prioritized Effects List, Joint Prioritized Target List, Effects Tasking Order, Daily Apportionment Order, and so forth.*

*The model also represents a social network of staff actors that collaboratively contribute their unique bodies of expertise to specific knowledge creation tasks. This aspect of the model enables the analyst to address knowledge creation as a socially influenced process wherein the quality of the resulting knowledge product depends upon the appropriate and effective integration of unique areas of expertise. Here, staff actor knowledge is stochastically represented in terms of probability matrices that specify the likelihood of an actor "recognizing" the linkages that exist among the thousands of knowledge elements. The model structures the participation of staff actors through their assignment to specifically defined boards, working groups, and cells within the JTF command process. Additionally, the ability of each actor to effectively contribute their unique knowledge within these various communities of interest is modulated by a number of cognitive, social, organizational, and technological factors that can be set by the analyst.*

*The present model includes a baseline database that addresses a four-phase operational scenario: setting initial conditions, initial forced entry, decisive action, and stability and reconstruction. These phases include a wide variety of political, military, economic, social, information, and infrastructure (PMESII) scenario elements that must be addressed by the JTF planning process. Model output can be used to assess overall JTF planning effectiveness (in terms of the percentage of "ideal world" actionable knowledge reflected in the resulting Effects Tasking Order), number of mission nominations that produce unintended negative consequences (due to inadequate vetting), and operational outcome (in terms of the percentage of operational campaign objectives successfully executed in each phase of the scenario). A host of diagnostic information is also provided by the model that can be used to assess patterns of staff actor involvement and other types of internal system performance. Specific guidance is provided regarding the study of a variety of information technology, leadership, training, and personnel management issues and their impact on the JTF command system effectiveness. Two sets of parametric model runs are included in this report that illustrate the model's ability to address the impact of staff actor knowledge and personnel instability on key staff positions. The model is written in Micro Saint Sharp and can be executed on a desktop computer with sufficient speed and memory. While the present model includes only a rudimentary representation of actual battlespace results, its structure lends itself to future integration in a larger confederation of combat simulation models.*

*The goal of Project Gnosis was the initial proof-of-principle development of a new generation of simulation models that would be capable of analytically addressing multiple facets of the sensemaking and knowledge management process that occurs within a military command and control system. To that end, the present model allows the analyst to examine the impact of various cognitive, social and—to a limited extent—ecological variables on the ability of a JTF command process to produce and execute an Effects Tasking Order. As with a real-world military command and control system operating in a modern PMESII problem space, the simulated planning and execution process reflects the complex interaction of thousands of constructs and processes. Although the underlying logic of the model architecture is relatively straightforward and transparent, our limited experience with this type of simulation model in the present project has revealed its use to be challenging. Various sets of cognitive and social variables and constructs embedded within the model can interact in sometimes surprising ways to either enhance or degrade knowledge creation performance. Yet this is merely a reflection of the same complexity faced by analysts in studying real-world phenomena. Accordingly, great care must be taken in both defining the types of systems engineering issues to be addressed and the manner in which these issues are reflected in the myriad of data input required for each model run.*

*In this regard, the report has suggested a number of "analytic avenues" along which the analyst can use the model to address certain types of systems engineering issues. Yet this guidance must be supplemented with the analyst's experience in running the model –experience that reveals critical model sensitivities and limitations. Thus, caution must be raised against the notion that the model can be employed by the casual user to generate a quick or simple set of parametric analyses. Like with any complex simulation model, the use of this model requires a committed set of analysts who can dedicate the time and attention needed to become intimately familiar with the model's workings.*

*The two series of parametric runs illustrated in the report are but a small sampling of the studies that could be undertaken with the model, depending upon the interests of the analyst. Like any complex simulation model, the present model is an analytic tool, not an answer to a specific systems engineering question. Consequently, the validity and quality of the insight achieved with the use of this model depends entirely upon the skill of the analyst to (1) develop valid input parameters from real-world observations and experience, (2) calibrate these input parameters with the analytic assumptions and algorithms embedded within the software, (3) form the input parameters into a cohesive "case representation" that is consistent with the model architecture, and (4) properly interpret the model output to reflect the type of insight appropriate for addressing a specific systems engineering issue.*

*Finally, it is acknowledged that the present model is by no means a complete representation of the process by which actionable knowledge is produced by an organization in the real world. Much research remains for the future to explore and refine other aspects of sensemaking and knowledge management. Project Gnosis is the beginning of but a very long journey to address the cognitive, social, and ecological dimensions of this process in a systematic and analytic manner. It has, however, demonstrated the feasibility and utility of such an undertaking. To that end, the present research study serves as both a milestone for the present and a direction sign for the future.*

# INTRODUCTION

This final technical report summarizes the work and findings of a two-year Phase-II Small Business Innovative Research (SBIR) project (*Project Gnosis*) that developed an explicit simulation of the sensemaking and knowledge creation process within a Joint Task Force (JTF) command system. The project was funded by the Human Effectiveness Directorate of the Air Force Research Laboratory at Wright-Patterson Air Force Base in response to the Air Force's need for a new generation of command and control ($C^2$) models. Earlier conceptual designs of this model were published by Leedom & Eggleston (2005a) and Leedom & Eggleston (2005b). The resulting simulation model explicitly portrays the process by which a JTF headquarters translates higher-level command intent into a specific operational tasking order that is subsequently executed by the various air, ground, maritime, and Special Forces subordinate commands. The knowledge space represented within the model considers the various political, economic, military, social, information, and infrastructure (PMESII) dimensions of the battlespace over a four-phase operational scenario. Additionally, the model explicitly portrays the operational expertise, social status, and availability characteristics of relevant staff actors within the JTF command system. These staff actors comprise various network-enabled planning boards, working groups, and cells within the JTF command system. It then uses these representations to estimate the degree to which each actor participates in various steps of the collaborative planning process. The resulting quality of the operational tasking order that emerges from this process (measured against an "ideal world" plan) is significantly influenced by contributions each staff actor is allowed to make at specific steps in the planning process. Through this type of modeling representation, analysts can explore the impact of various cognitive, social, organizational, and technological factors on the overall effectiveness of the JTF command system. The simulation model, using the latest features available in the *MicroSaint*® modeling environment, can be run on a desktop PC with a Microsoft Windows® operating environment. Depending upon the number of scenario phases considered in a given execution of the model, run times vary between 30 seconds and a few minutes. The resulting model allows the analyst to explore various types of parametric changes to actor knowledge, social status, and availability, as well as different types of collaboration rules that affect staff actor contribution.

This final technical report provides an in-depth discussion of the unique modeling architecture that emerged from this project –an architecture that provides explicit insight into the structure and content of the knowledge space that is constructed by the JTF staff. As part of this discussion, the report addresses the scenario-based knowledge elements that comprise the "ideal world" reference standard for measuring the quality of the operational plan. The technical report includes a number of appendices that provide details of the model task descriptions and the baseline input data –*e.g.*, staff actor characteristics, scenario-based knowledge elements, etc. A model user manual is provided as a separate, stand-alone document under this project.

Finally, a brief word is in order regarding the name given to this research project: *Project Gnosis*. The word "γνώσις" comes from the Greek language and means "knowledge" or "insight." The word is particularly appropriate since the goal of this project was to create a model that explicitly and analytically captured the contribution of JTF staff knowledge or insight to the creation of a set of operational orders in a complex, multi-dimensional scenario.

## MODELING ARCHITECTURE

The modeling architecture for representing the sensemaking and knowledge creation process within a JTF command system is motivated by research findings that emerged from the Phase-I SBIR study preceding this project (Leedom, 2004). This study found that sensemaking and knowledge creation can be defined as a multidimensional—or system-of-systems—process of developing operational understanding in a complex and evolving battlespace. Specifically, this process can be characterized in terms of the following system of systems:

- *Cognitive System* Sensemaking and knowledge management can be viewed as the process of collecting, filtering, interpreting, framing, and organizing available information into actionable knowledge for command decision making.
- *Operational System* Sensemaking and knowledge management can be viewed as an active and dynamic process in which the commander is attempting to construct and impose a specific intent or reality against a reactive adversary.
- *Social System* Sensemaking and knowledge management can be viewed as the process of reconciling and integrating multiple stakeholder perspectives into a common operational vision that is driven by command intent.
- *Organizational System* Sensemaking and knowledge management can be viewed as the process of building up appropriate bodies of staff expertise, equipping those bodies with effective information systems and collaboration technology, and efficiently structuring the knowledge management and decision making process rhythms of those bodies.

Together, these various systems combine and interact to produce the knowledge needed to command joint military operations. Since they act together as a system-of-systems entity, each component must be addressed and understood in terms of its influences and contributions. Accordingly, the analytical modeling of sensemaking and knowledge creation within an organization such as a JTF command system should be approached from a multidimensional point of view –one that considers the cognitive, operational, social, organizational systems and their interactions. The following discussion outlines the approach taken in *Project Gnosis* to reflect each of these aspects in the modeling architecture that emerged from this work. Selected references are given in this document to the underlying theories that motivated the modeling architecture. For a more complete discussion of these theories, the reader is referred to the Phase-I study's technical report.

### MODELING THE COGNITIVE ASPECTS OF SENSEMAKING AND KNOWLEDGE CREATION

Sensemaking and knowledge creation are essentially cognitive processes that take place at the individual level, although (as discussed later) it is appropriate to consider the social process of forming a shared understanding when specific individuals collaborate within an organization. In the present project, individual cognition is reflected in terms of how individual staff actors are characterized in their ability to mentally recognize a set of inputs (represented as a set information elements or cues) and, through application of their individual experience and tacit expertise, generate a set of outputs (represented as an associated set of knowledge declarations). This is considered the essential process of knowledge creation in the present project. In terms of

modeling knowledge creation tasks, the generation of causal linkages between a set of task input and outputs forms the fundamental modeling paradigm by which individual expertise is represented analytically. The use of a cue recognition paradigm for modeling the tacit expertise or knowledge of specific staff actors within the model is motivated by three areas of cognitive research: (1) the recognition-primed model of sensemaking developed by Winston Sieck and a team of researchers from Klein Associates (Sieck et al, 2004), (2) the multiple-trace model of schema abstraction of Douglas Hintzman (1986), and (3) the vector-activation model of tacit knowledge developed by Haridimus Tsoukas (2002). By applying this paradigm in a recursive manner, the model traces the mental process by which high-level abstract concepts or ideas are successively decomposed into a lower—and more detailed—elements of knowledge that can be translated into action.

A simple illustration of how this process is modeled is shown in Figure 1. The analytical functioning of this paradigm is similar to the functioning of a Leontief input-output matrix in economics. On the left, the task input stimuli (in the form of a vector of binary values) represents the current knowledge state of the actor at a certain level of knowledge abstraction. The vector is defined by the set of ideas—say, candidate endstates of a military operation—that are potentially relevant to the JTF. The "1"s and "0"s within the vector represent which of these ideas are currently "activated" in the actor's situational awareness or understanding. In turn, this set of activated knowledge elements serves as mental cues for triggering other mental associations – say, the type(s) of centers of gravity that are potentially associated with each desired endstate in the operation. The matrix shown in Figure 1 represents the actor's tacit expertise –or his ability to mentally associate each of these input cues with another set of meaningful knowledge elements. Thus, using the illustration of desired endstates and centers of gravity, the "1"s shown within the matrix reflect those areas where the staff actor's area of expertise would allow him to mentally recognize that a valid association exists. The resulting matrix multiplication of the task input vector times the tacit knowledge matrix produces, in turn, another vector of binary values that reflects the new knowledge created during this mental task. Here, the "1"s and "0"s within the output vector represent the actor's situational awareness or understanding of which centers of gravity are now "recognized" as being relevant to the operation. The output vector (or knowledge state) of this task then serves as the input to a subsequent task where additional tacit knowledge is used to mentally associate (decompose) the recognized centers of gravity with specific supporting PMESII (*i.e.*, political, military, economic, social, etc.) functions that must be engaged in order to achieve desired effects against each center of gravity. As noted above, the recursive application of this Leontief input-output paradigm allows the model to represent the process by which high-level abstract ideas—*e.g.*, command intent expressed in terms of "recognized" operational objectives—are successively decomposed into a set of lower-level knowledge elements –*e.g.*, specific "recognized" battlespace objects and actions targeted against those objects. [Note, the next section of this discussion introduces and outlines the specific knowledge structure assumed in the model to decompose the overall operation.]

The matrix shown in Figure 1 represents the "ideal world" in which mentally associations are deterministically formed. In the real world, such mental associations are better represented as a stochastic process that reflects the area and level of expertise of the staff actor performing the mental task. Such an arrangement is illustrated in Figure 2 where the "1"s have been replaced by specific probability functions that yield an association value. Missing or zero probability values indicate a situation where a specific input cue falls outside of the staff actor's area of experience

or expertise. The remaining non-zero values represent the mean likelihood that the staff actor would recognize a specific input cue and be able to mentally associate it with a specific output knowledge element.[1] Here, the association strength computed within each cell of the matrix reflects the relative level of expertise (*e.g.*, novice versus expert) that the staff actor possesses in each area of task cues. Thus, the operational expertise of each staff actor within the JTF command system can be simply represented in terms of a series of stochastic input-output matrices required for performing the different types of mental tasks required of that staff actor in the JTF planning process.

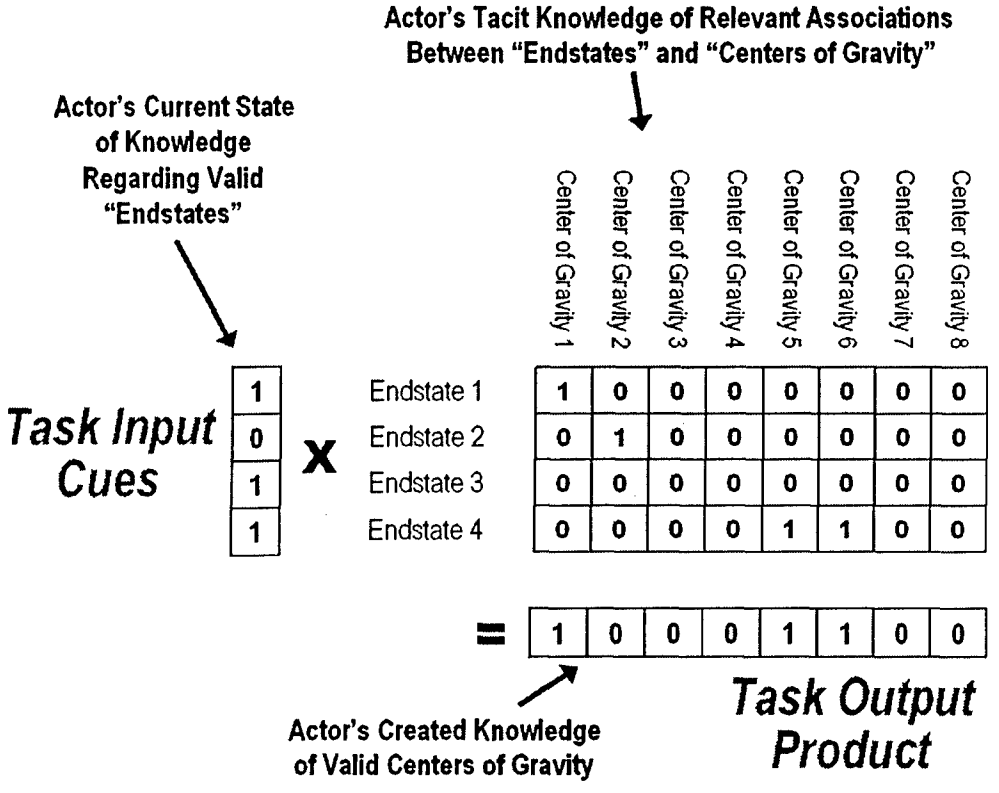



**Figure 1 Modeling Paradigm for Representing Staff Actor Knowledge Creation**

Using a matrix of this form to represent the expertise of an individual staff actor allows the analyst to do several things. First, the process of invoking the matrix to transform a set of input cues into a corresponding set of output knowledge products can be represented stochastically – *i.e.*, the mean likelihood values can be use with a random number generator in the model to determine the specific knowledge products generated each time the model is executed. Alternatively, the output of the normal distribution function can be compared against a "threshold value" that is specified by the analyst. This threshold value, in turn, can be used to reflect the amount of deliberation time allow for the process. For example, a low threshold value allows a greater number of associations to be recognized and would correspond to a situation in which the staff actor was given ample time to ponder the set of input cues. Conversely, a high threshold value allows fewer associations to be made and would correspond to a situation in which the staff actor was given little time to ponder the set of input cues. This strategy is

[1] A normal (Gaussian) distribution function is assumed with a mean, $\mu$, set equal to the value specified in the matrix cell and a standard deviation, $\sigma$, set equal to a user-specified input value (typically $0 \leq \sigma \leq 0.3$).

reflected in the baseline model architecture in order to allow the analyst to specify either a deliberate or hasty planning assumption. In modeling terms, this simply means that the computed values in the output vector are rounded up to a value of 1 or truncated to a value of 0, depending upon whether or not they meet the threshold value specified by the model user. For example, in the illustration shown in Figure 2, an association strength of 0.27 is computed stochastically for "Center of Gravity 6." However, since this value does not exceed the specified threshold, it is truncated to a value of 0 to indicate that it has not reached the level of "recognition" by the actor. The general manner in which the threshold value influences staff actor performance is shown in Figure 3.

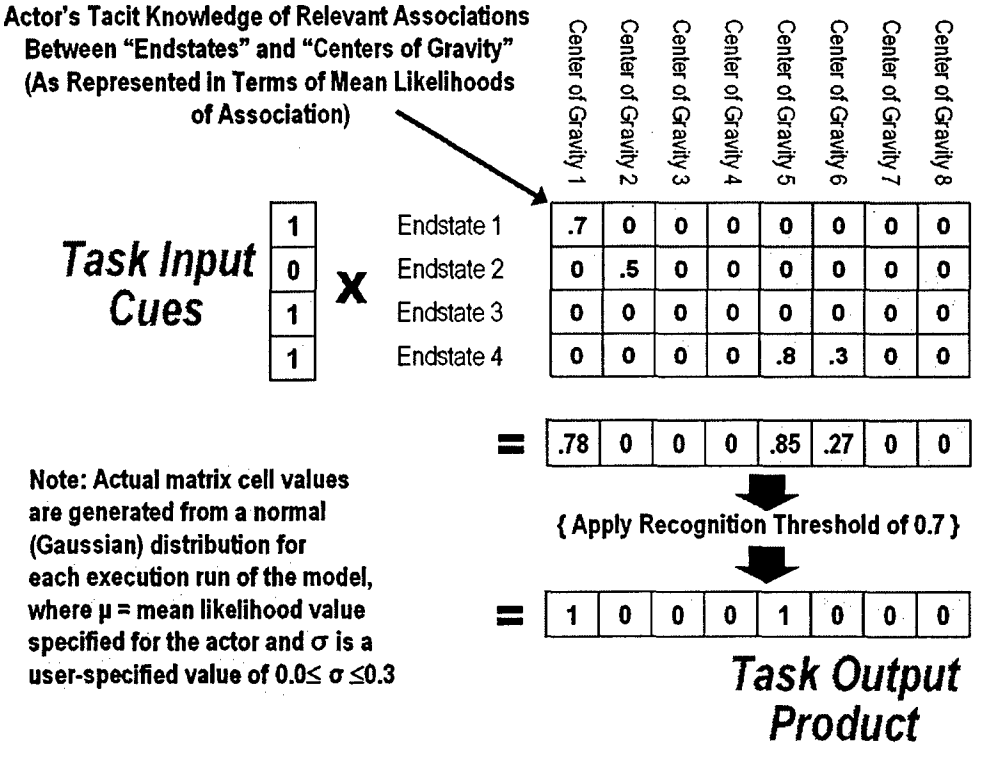



**Figure 2 Stochastic Paradigm for Representing Knowledge Creation**

As indicated earlier, the analyst can adjust the pattern of mean likelihood values to reflect specific areas and levels of expertise for each staff actor. In this manner, the analyst is able to accommodate a variety of personnel factors such as (1) the level of staff actor training and (2) the length of operational assignments. For example, a lower ranked staff officer might reflect a novice level of expertise, whereas a more senior officer might be specified to have a wider range of expertise. Similarly, staff officers only recently assigned to a JTF headquarters might be considered to have lower probability values, whereas a staff officer who has spent considerable time in the area of operations might have a significantly highly likelihood of interpreting a set of input cues in terms of meaningful knowledge outputs.

Finally, the analyst can use this type of matrix to specify other forms of expertise that might be available to the JTF command system. For example, a computer-based decision aid or existing knowledge base—e.g., an Operational Net Assessment (ONA) database—can be modeled as a non-human staff actor. In this case, the mean likelihood values would be set at a very high level to indicate those relationships or associations specified in the computer-based decision aid or

existing knowledge base. By executing the model with and without the presence of such an actor, the analyst can assess the contribution of the decision aid or knowledge base to overall JTF command system effectiveness.

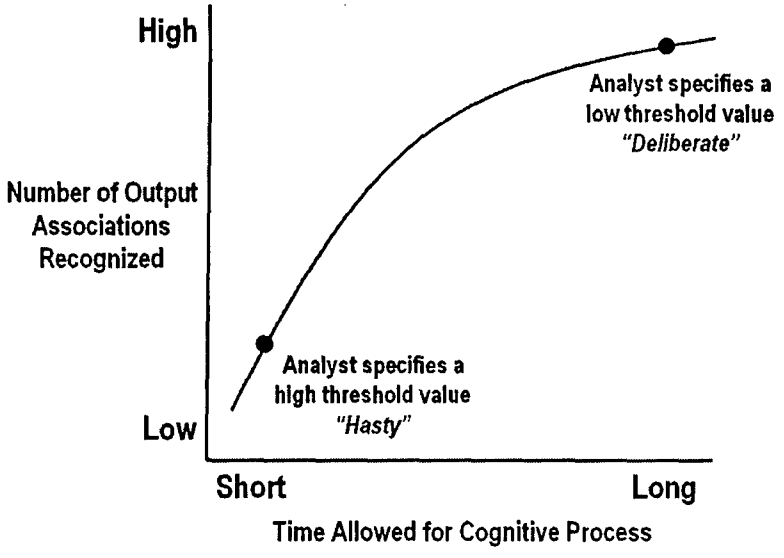



**Figure 3 Staff Actor Performance as a Function of Task Time**

## MODELING THE OPERATIONAL ASPECTS OF SENSEMAKING AND KNOWLEDGE CREATION

The specific cognitive processes that take place within a JTF command system are shaped or structured by the nature of the operational problem space. The process begins with the receipt of a set of strategic goals or objectives that have been assigned by the National Command Authority (NCA). The process culminates with the development and issuance of a specific set of tasking orders that specify the actions to be carried out by each of the subordinate military commands or (in some cases) by the diplomatic, economic, and information media agencies that are supporting the operation. In order to move from the beginning to the culmination of this process, the JTF staff must engage in a series of planning activities that systematically decompose the NCA objectives into meaningful knowledge elements that comprise what might be termed "the battle calculus" of the operation. In the present project, the modeling architecture for representing this decomposition follows the general form of Rasmussen's abstraction hierarchy, identified and described in Phase I of this modeling project (Rasmussen *et al*, 1990). Here, Rasmussen and his research cohorts define a cognitive work space in terms of several dimensions, one of which is *means-ends relations*. These relations —expressed in terms of several levels of abstraction—are considered important when dealing with discretionary decision making –the type that typifies much of the decision making within a JTF planning process.

To provide further structure to the knowledge elements within this discretionary decision space, the modeling architecture adopts several ideas found in the military literature. The first idea comes from the writings of Major General Honoré (Honoré, 2002). Describing the process of mentally visualizing the battlespace, Honoré describes the importance of (1) visualizing each operation from the current state along a line of operations to the end state, (2) seeing the adversary in terms of centers of gravity (primary sources of moral or physical strength, power,

and resistance), capabilities, requirements, and vulnerabilities in order to determine decisive points that can be connected to form a line of operations, and (3) seeing one's own resources that can be employed to impose one's will on the adversary. Addressing the recently popular term of effects-based operations (EBO), Buster McCrabb notes that the mental visualization of the battlespace "*spans the gamut of military operations from humanitarian relief to major theatre war. It accounts for lethal and non-lethal applications of force delivered kinetically or via non-kinetic modes. EBO incorporates and expands upon traditional approaches such as targets-based and strategy-to-task. ...The goal of an effects-based approach is tracing and understanding how those actions affect the attacker or enemy commander's behavior. Functions are defined as broad, fundamental, and continuing activities. Processes, or activities, are how work—tasks--is done. For commanders, the most basic activities are planning, executing, and assessing operations. EBO is a method for accomplishing those tasks.*" (McCrabb, 2002) A similar idea is found in Joint military doctrine which states that "*The most effective method for planners to conduct an analysis of the adversary's centers of gravity to identify its critical vulnerabilities is to visualize the centers of gravity in terms of a system –i.e., what are its functional components (critical requirements) and how do they relate to one another? What elements within this 'system' protect, sustain, or integrate its various elements or components? Once a detailed systemic analysis is completed, the planners should then try to identify the critical vulnerabilities within that system.*" (JCS, 2002) Finally, the recent development within US Joint Forces Command (USJFC) of the Operational Net Assessment (ONA) database concept provides formal structure to the ideas expressed by Honoré, McCrabb, and others. Specifically contained within their description of a future JTF command system is the concept of a database that analytically links command intent with action: "*ONA development is a collaborative process that relies on interaction among a number of participants, both within and external to the* [JTF headquarters]. *The ONA Working Group... is a cross-functional organization that meets collaboratively to build the baseline ONA by linking nodes to effects; identifying potential Diplomatic, Informational, Military, and Economic (DIME) options; linking actions to effect-node pairs; identifying secondary and unintended consequences for effects of effect-node-action linkages; applying resources to effect-node-action linkages; and updating the ONA.*" (USJFC, 2004)

Working within the abstraction framework suggested by Rasmussen and the guidance offered by the various military references, it is possible to envision the JTF planning process in terms of a hierarchy of associated knowledge elements. The general structure of this hierarchy is illustrated in Figure 4, as it has been manifested in the modeling architecture. Beginning with the set of NCA objectives, each objective is considered to be mentally associated with a desired endstate, an abstract statement describing some condition of the battlespace that defines successful achievement of the objective. Each desired endstate is then mentally associated with one or more specific centers of gravity that represent the major points at which an adversary or situation can be operationally influenced in order to achieve the desired endstate. Centers of gravity are still considered to be somewhat abstract in nature; however, from the point of view of simulating the construction of actionable knowledge, they constitute an important object to be represented in the model architecture.

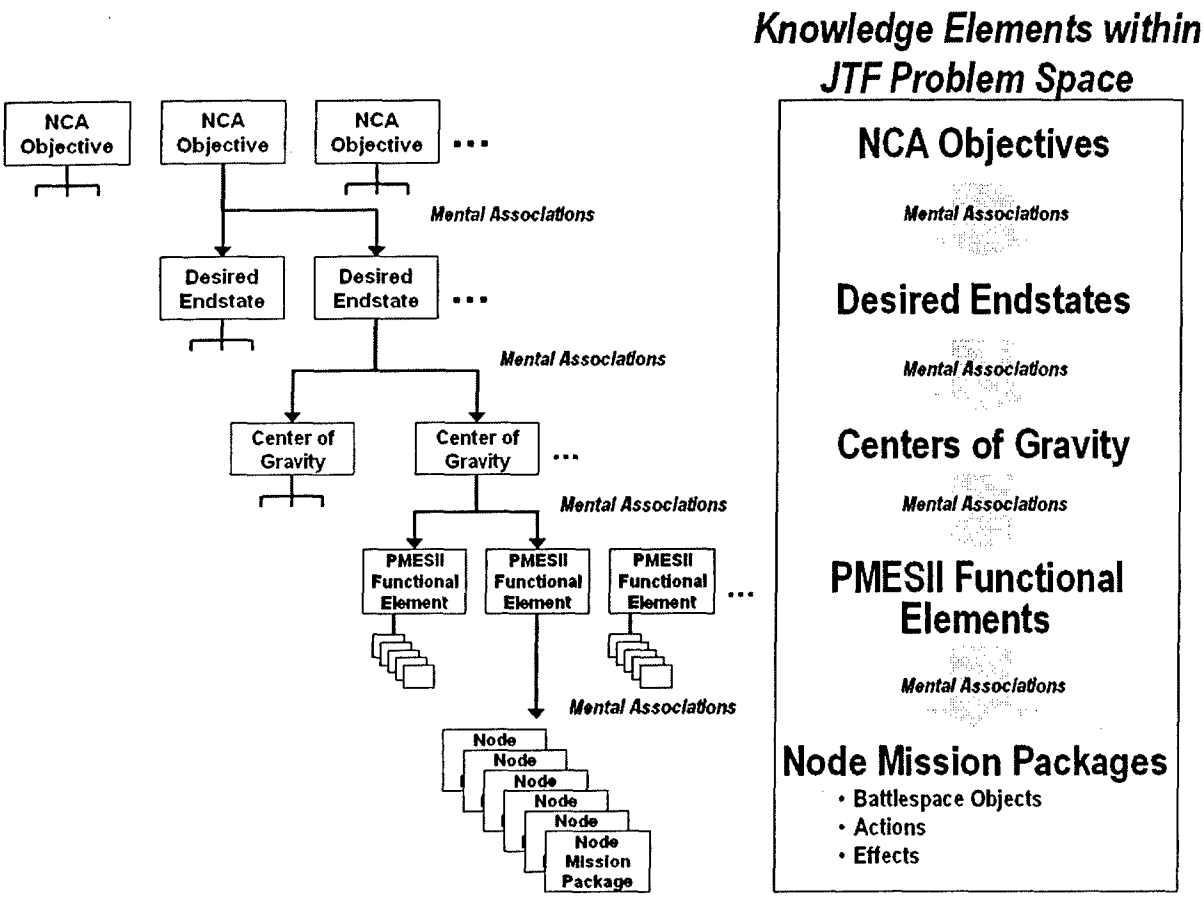



**Figure 4 Decomposition of Knowledge Elements within the JTF Problem Space**

Continuing in this manner, centers of gravity are further decomposed into a set of supporting PMESII functional elements. These knowledge elements refer to various political, military, economic, social, information, and infrastructure functions within the battlespace that support a particular center of gravity. Hence, the mental association of these functional elements with a specific center of gravity constitutes an important cognitive process to be represented in the modeling architecture. Finally, the lowest level within the knowledge structure consists of the specific node mission packages that are deemed necessary for influencing the PMESII functional elements in a specific way. Each node mission package is defined in terms of a specific type of battlespace object (*e.g.*, a political figure, a military installation, a unit of the adversary's military or insurgency force, a construction site), a specific action to take against that object (*e.g.*, diplomatic initiative, air mission, ground mission, Special Forces mission, contractor project), and a specific desired effect that the action is to achieve against the object (*e.g.*, negotiate, destroy, capture, rebuild).

In order to provide a reference standard for assessing the performance of the JTF planning process, the modeling architecture presumes that the analyst will first define the operational scenario in terms of an "ideal world" knowledge structure. That is, the analyst defines the operational scenario in terms of a completely populated hierarchy of knowledge elements and their corresponding associations. This "ideal world" knowledge structure defines the correct associations that would be made at each level of knowledge creation if the JTF staff had unlimited time and perfect expertise with which to perform the planning process. It should be

noted at this point of the discussion that the different "levels" of knowledge elements defined within this framework roughly correspond to knowledge products developed at different stages in the JTF planning process. For example, the desired endstates and associated centers of gravity correspond to important elements of the JTF Commander's Guidance. Similarly, the decomposition of centers of gravity into the associated PMESII functional elements corresponds to important elements of the Prioritized Effects List developed by the JTF's core planning group. Continuing further down this hierarchical structure, the identification of node mission packages to be focused against each of the PMESII functional elements corresponds to the essential knowledge elements reflected in the Joint Prioritized Target List. Finally, the assignment of node mission packages to specific subordinate commands under the JTF command structure and the compositional definition of resources (two processes not depicted in Figure 4 but included in the model) roughly correspond to the product of the course of action analysis and weaponeering analysis phase of the JTF planning process.

As such, this structure provides a standard framework for specifying individual staff actor expertise as discussed in the preceding section. That is, the "real-world" expertise of each staff actor is specified relative to this reference standard by entering appropriate mean likelihood values that correspond with the various association linkages. Using the Leontief matrix structure discussed earlier, the knowledge elements identified at one level of this hierarchy become the "input cues" for identifying the next lower level of knowledge elements. This iterative process repeats between each level of the hierarchy extending from the NCA objectives down to the node mission packages. Because the staff actors are characterized as recognizing these association linkages with less than perfect ability, the resulting knowledge structure produced in any given model execution will always be less populated than the "ideal world" reference standard. That is, the resulting knowledge structure produced by the JTF staff will typically reflect "missing knowledge elements" at each level because of the limited expertise of the staff actors. In this fashion, the degree of completeness (or incompleteness) provides an appropriate method for measuring and assessing JTF staff performance. As will be discussed later, the quality of the operational plan (actionable knowledge structure) produced by the JTF command system depends strongly on which staff actors effectively contribute their expertise to specific steps in the planning process.

In addition to specifying which knowledge elements are correctly identified and associated within the overall knowledge structure produced by the JTF staff, the modeling architecture also concerns itself with the notion of unintended negative consequences –as highlighted earlier in brief discussion of the ONA database. Negative, unintended consequences are assumed within the modeling architecture to arise from improper vetting of the battlespace functions and objects relative to the rules-of-engagement specified for the JTF command system. Thus, within the modeling architecture, specific staff actors are characterized in terms of having awareness of which PMESII functional elements and which battlespace objects have been declared "restricted" because of a particular rule-of-engagement. If the staff actor effectively contributes to the planning process, their awareness results in a particular PMESII functional element or node mission package being deleted from the operational order produced by the JTF command system. Conversely, if the staff actor is prevented from effectively contributing to the planning process, then a "restricted" PMESII functional element or battlespace object is inadvertently included in the operational order. Because the modeling architecture does not represent in detail the actual engagement of specific battlespace objects (and their resulting consequences), it is

merely assumed that the inadvertent inclusion of a "restricted" PMESII functional element or battlespace object detracts from the overall performance of the JTF command system.

Finally, it should be noted that the model architecture presumes that each of these various battlespace knowledge elements reflect differing degrees of operational importance. As described in more detail later, the operational weighting scheme assigns various "priority values" to desired strategic endstates and centers of gravity to determine their relative contribution to campaign success. Additionally, the weighting scheme specifies how much each PMESII functional element contributes to its parent center of gravity. As these values are associated downward to the node mission packages, it then becomes possible to compute an "operational score" for each node mission package. As node mission packages are identified, added to the resulting operational plan, and then subsequently successfully executed within the model, this weighting scheme provides a method for tracking the operational progress of the campaign –*e.g.*, the "operational scores" of the successfully executed node mission packages are summed and compared against the total possible score value (ideal world) to measure the relative success of the JTF planning process.

For the present project, a four-phase operational scenario was developed and articulated in terms of an "ideal world" knowledge structure. Figures 5 and 6 summarize each phase of this baseline scenario in terms of general thrust and number of knowledge elements specified at each level within the reference knowledge framework. As can be seen from these illustrations, the number of branches within the JTF knowledge framework grows significantly as one moves from the level of NCA objectives to the level of node mission packages. It is also noted in Figure 6 that the number of node mission packages that must be potentially considered by the JTF command system in Phase 4 of the scenario (*Stability and Reconstruction*) is significantly greater than the corresponding number of node mission packages in Phases 1-3. A complete description of the scenario knowledge elements is presented in Appendix A. This baseline scenario was used for all subsequent model development and testing activities during the current project.

| Setting Conditions for Success | Initial Forced Entry | Decisive Operations | Stability and Reconstruction |
|---|---|---|---|
| **NCA Objectives**<br>• Shape battlespace<br>• Regional diplomacy | **NCA Objectives**<br>• Conduct deception campaign<br>• Conduct initial forced entry<br>• Set conditions for follow-on | **NCA Objectives**<br>• Eliminate WMD capability<br>• Eliminate regime power<br>• Neutralize combat divisions<br>• Secure natural resources<br>• Protect/sustain civilians<br>• Establish law/order<br>• Protect coalition logistics | **NCA Objectives**<br>• Defeat violent spoilers<br>• Co-opt nonviolent spoilers<br>• Establish next-state conditions<br>• Develop international support |
| **Desired Endstates**<br>• Air/sea superiority<br>• Persistent ISR<br>• Insurgency alignment<br>• Capitulation/neutrality<br>• Population support<br>• Initial deployment<br>• Host nation agreements<br>• Neutrality agreements | **Desired Endstates**<br>• Fix adversary forces<br>• Air/sea superiority<br>• Persistent ISR<br>• Eliminate WMD threat<br>• Degrade regime leadership<br>• Amphibious assault<br>• Airmobile assault<br>• Build insurgency axis<br>• Key leader capitulation<br>• Build population support<br>• Build humanitarian base<br>• Protect national resources<br>• Protect minority population | **Desired Endstates**<br>• WMD under positive control<br>• Regime leaders neutralized<br>• Regime party neutralized<br>• Divisions capitulated or destroyed<br>• Protect national resources<br>• Keep population in homes<br>• Humanitarian relief<br>• Protect minority population<br>• Destroy terrorist base<br>• Stop foreign infiltrators<br>• Apprehend criminals<br>• Protect convoys / assembly areas | **Desired Endstates**<br>• Isolate/defeat spoilers<br>• Restrain disruption agents<br>• Civil law/order<br>• Public infrastructure<br>• Public health services<br>• Internal security forces<br>• Economic development aid<br>• PVO/NGO synchronization |

**Figure 5 Summary of "Ideal World" Knowledge Elements within JTF Problem Space - Part I**

| Setting Conditions for Success | Initial Forced Entry | Decisive Operations | Stability and Reconstruction |
|---|---|---|---|
| **Centers of Gravity**<br>• Adversary airpower systems<br>• Adversary seapower systems<br>• Key areas of interest<br>• Internal insurgency forces<br>• Key admin/military officials<br>• Civilian population<br>• US/coalition forces<br>• Country Green<br>• Country Orange | **Centers of Gravity**<br>• Eastern border surveillance<br>• Eastern combat divisions<br>• Eastern advance routes<br>• Adversary airpower systems<br>• Adversary seapower systems<br>• Key areas of interest<br>• WMD stockpiles/delivery systems<br>• Top regime leadership<br>• Western border defense<br>• Western security forces<br>• Western paramilitary<br>• Key airfield defenses<br>• Southern paramilitary<br>• Capital area paramilitary<br>• Western/southern leaders<br>• Cultural/religious support<br>• Key route traffic<br>• Country Green staging areas<br>• Resource infrastructure<br>• Ethnic neighborhoods | **Centers of Gravity**<br>• WMD stockpiles/delivery systems<br>• WMD labs/production<br>• Key regime actors<br>• Political/financial networks<br>• Capital area paramilitary<br>• Capitulating divisions<br>• Resisting divisions<br>• Resource infrastructure<br>• Key population leaders<br>• Civilian refuge traffic<br>• Distribution relief areas<br>• Ethnic neighborhoods<br>• Terrorist operations<br>• Foreign infiltration cells<br>• Criminal networks<br>• Coalition supply convoys<br>• Coalition assembly areas | **Centers of Gravity**<br>• Neighborhood intelligence<br>• Operating spoiler cells<br>• Insurgency attack sites<br>• Ethnic communication<br>• Spoiler organizations<br>• Major disruption sites<br>• Civil administration<br>• National police force<br>• Electricity/water/sewage<br>• Information networks<br>• Public education<br>• Transportation networks<br>• Public health systems<br>• National military forces<br>• Key economic sectors<br>• PVO/NGO organizations |
| | | See Appendix B for detailed description of PMESII Functional Elements, Node Mission Package Classes, Node Mission Packages, and Operational Sorties | |
| **PMESII Functional Elements**<br>• 54 functional elements | **PMESII Functional Elements**<br>• 61 functional elements | **PMESII Functional Elements**<br>• 43 functional elements | **PMESII Functional Elements**<br>• 55 functional elements |
| **Node Mission Package Classes**<br>• 59 node classes | **Node Mission Package Classes**<br>• 64 node classes | **Node Mission Package Classes**<br>• 45 node classes | **Node Mission Package Classes**<br>• 61 node classes |
| **Node Mission Packages**<br>• 488 mission packages | **Node Mission Packages**<br>• 610 mission packages | **Node Mission Packages**<br>• 501 mission packages | **Node Mission Packages**<br>• 2918 mission packages |

**Figure 6 Summary of "Ideal World" Knowledge Elements within JTF Problem Space - Part II**

## MODELING THE SOCIAL ASPECTS OF SENSEMAKING AND KNOWLEDGE CREATION

Sensemaking and knowledge creation within an organization or large-scale system frequently involves multiple experts and/or stakeholders coming together to reconcile multiple viewpoints on a situation. At the same time, individual analysts and planners will often collaborate within specific communities of interest to pool their available information and experience. In this manner, the resulting understanding that emerges from this process is more robust than that which could be produced by an individual. Such communities of interest can form on a spontaneous or *ad hoc* basis, or they can be consciously managed through the deliberate formation of specific review and advisory boards, working groups, and planning cells.

For the purposes of this project, a community of interest is defined as a group of individuals—each holding different areas and levels of expertise—that comes together to address and resolve a specific problem or issue. As discussed later, many such communities of interest exist within a JTF command system to accomplish different steps in the planning process. At the heart of any community of interest is the socio-cognitive process of integrating and reconciling various bodies of expertise so that they might be used to form a shared understanding of the specific problem or issue of interest. This process is considered cognitive in nature because it is the tacit knowledge of each participant that is being made explicit and used to form a shared understanding. The process is also considered social in nature because various social factors influence the degree to which each participant contributes to this group process. In the present project, the modeling architecture accommodates both aspects of this socio-cognitive process.

From a cognitive perspective, the modeling architecture assumes that each staff actor is uniquely characterized in terms of the Leontief input-output matrices described earlier. These matrices are defined relevant to each specific knowledge creation task reflected in the modeling architecture and provide the analytical basis for computing a set of knowledge products from a set of input cues. Thus, if a given staff actor is considered to be potentially available for participating in a certain type of knowledge creation task in the model, then a corresponding input-output matrix must be defined for that staff actor against that specific task. When multiple staff actors collaborate on the same knowledge creation task, the modeling architecture first reconciles their individual input-output matrices into a single matrix (defined as the group consensus knowledge matrix). Then, as illustrated in Figure 7, the modeling architecture completes the task by applying the group consensus knowledge matrix against the task input cues.

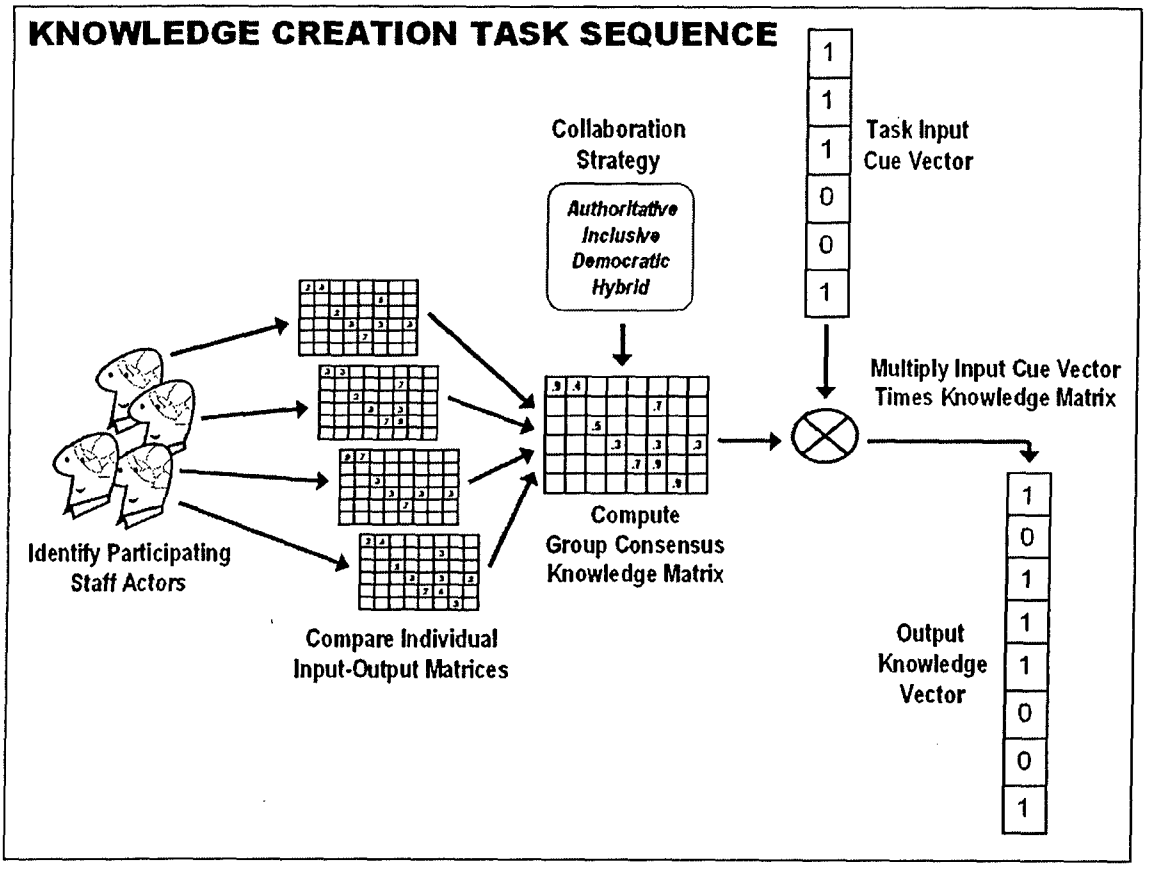



**Figure 7 Knowledge Creation Task Collaboration Model**

Four alternative strategies are included in the modeling architecture for reconciling a set of individual input-output matrices into a single group consensus knowledge matrix. These strategies reflect different forms of collaboration and include the following:

- *Authoritative Strategy*: The ranking staff actor's matrix is used as the group consensus knowledge matrix, while the matrices of the other participants are ignored. (Note: A defined attribute of each staff actor is the actor's formal military rank.) Such a strategy assumes that the ranking staff actor will dominate the community of interest by virtue of their formal rank within the organization. Figure 8 lists the range of formal military ranks considered in the model.

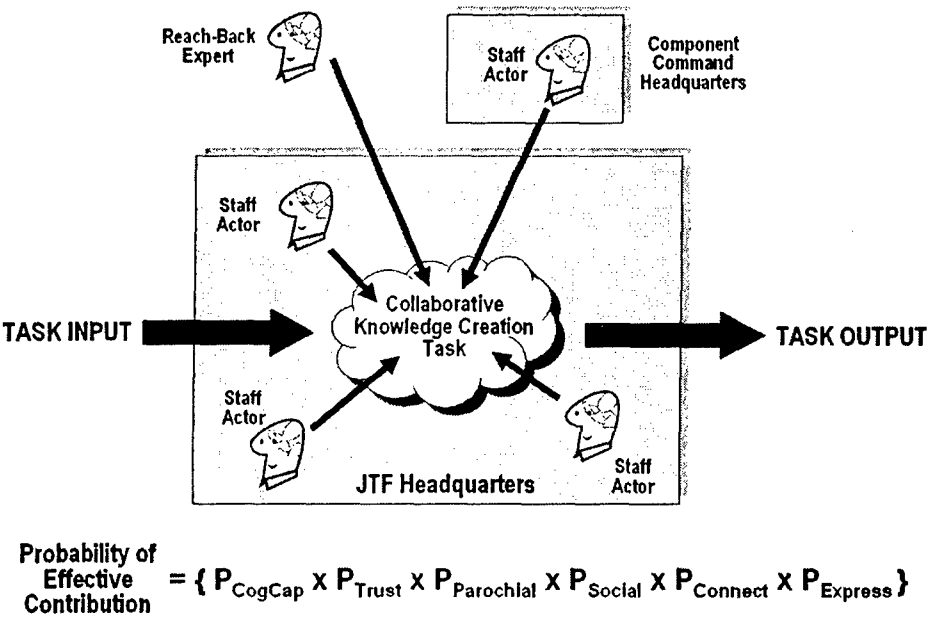
- *Inclusive Strategy*: The matrices of the participating staff actors are compared on a cell-by-cell basis, and the maximum probability value occurring within any of these matrices is used for the group consensus knowledge matrix. Such a strategy assumes that each participating staff actor contributes according to their relative areas and levels of expertise. This strategy achieves the highest overall performance in terms of recognizing input cues.
- *Democratic Strategy*: The matrices of the participating staff actors are compared on a cell-by-cell basis, and the numerical average of the probability values occurring within these matrices is used for the group consensus knowledge matrix. Such a strategy assumes that each participant mutually exerts influence on every other staff actor in the community of interest. Hence, the group is assumed to move in each case toward an average likelihood of recognizing specific input cues.
- *Hybrid Strategy*: The matrices of the participating staff actors are compared on a cell-by-cell basis, and the rank-weighted numerical average of the probability values occurring within these matrices is used for the group consensus knowledge matrix. This strategy is similar to the democratic strategy, except that the formal rank of each staff actor is used to weight the influence of that individual's probability values on the computed average value. Such a strategy assumes that participants mutually influence each other, but do so according to their formal rank within the organization.

**Formal Rank**

| | |
|---|---|
| 10 | General or Ambassador |
| 9 | Lieutenant General |
| 8 | Major General |
| 7 | Brigadier General |
| 6 | Colonel |
| 5 | Lieutenant Colonel |
| 4 | Major or Chief Warrant Officer 4-5 |
| 3 | Captain or Chief Warrant Officer 2-3 |

Figure 8 Range of Staff Actor Ranks

In addition to reflecting different collaboration strategies, the model architecture also considers a number of different obstacles to effective collaboration. As illustrated in Figure 9, each actor that can potentially participate in a specific knowledge creation task is first assessed in terms of six types of collaboration obstacles: (1) the cognitive capacity of the actor to comprehend the task, (2) the level of trust or familiarity of the actor within the JTF organization, (3) the existence of parochial barriers that inhibit the actor, (4) the social currency of the actor within the community of interest, (5) the communications connectivity of the actor, and (6) the expressive power of the collaboration tools through which the actor participates. Each of these obstacles is represented in terms of a probability value that, when combined with the other probability values, reflects the likelihood that a specific staff actor will effectively contribute his knowledge to the task. The actual process is represented in a stochastic manner in the model. That is, the computed likelihood of effective contribution is compared against a random number generated by the model to determine if a specific staff actor actually participates in an assigned knowledge creation task.




$$\text{Probability of Effective Contribution} = \{ P_{CogCap} \times P_{Trust} \times P_{Parochial} \times P_{Social} \times P_{Connect} \times P_{Express} \}$$

Figure 9 Staff Actor Collaboration Obstacles

Figure 10 summarizes the range of values available for selection in the model (available values annotated along each scale). Thus, for each staff actor defined in the model, the user can uniquely characterize that actor in terms of the six scales shown in Figure 10. This flexibility, in turn, allows the model user to parametrically explore the impact of such factors as personnel assignment policy, level of training and experience, communication network reliability, inter-agency cooperation, degree of collaboration tool sophistication, and so forth.

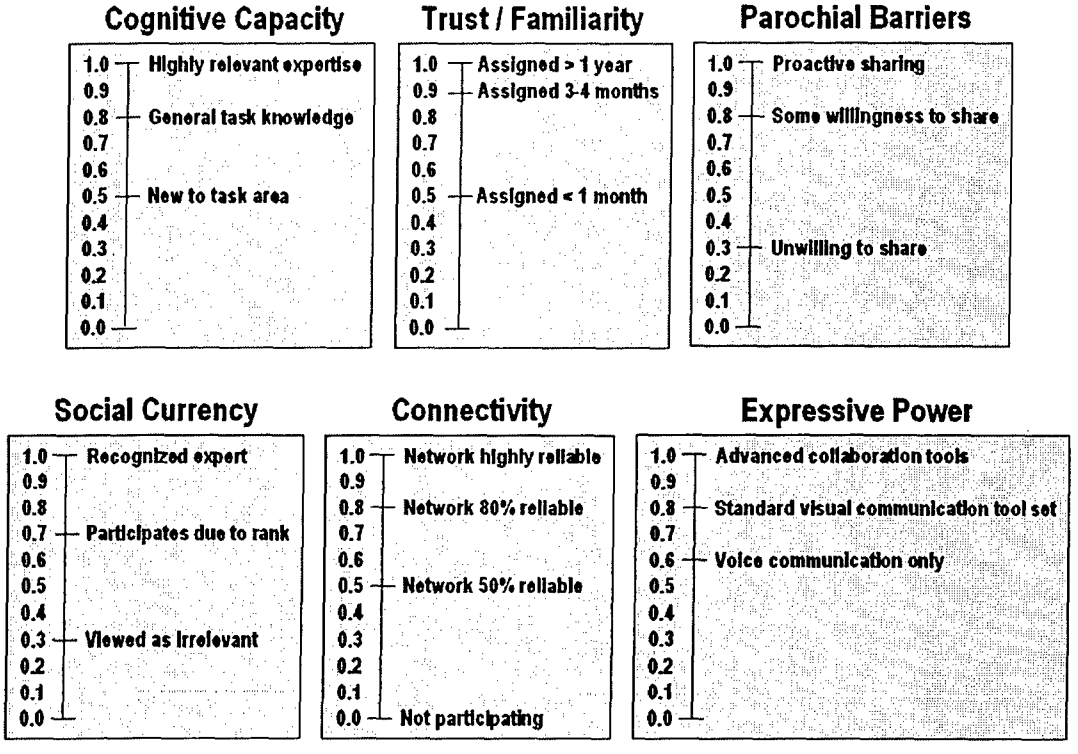



Figure 10 Collaboration Obstacle Levels Available in Model

## MODELING THE ORGANIZATIONAL ASPECTS OF SENSEMAKING AND KNOWLEDGE CREATION

Sensemaking and knowledge creation within an organization will depend upon the specific population of staff actors and experts available to that organization plus the manner in which these staff actors and experts are functionally organized into specific communities of interest. In the present project, we conducted a review of relevant Joint and Service documents to identify the types of staff actors that might be available to the JTF planning process (Eggleston, 2005; Dept of Army, 2003, 2005; Joint Chiefs of Staff, 2002a, 2002b; Phister *et al*, 2001; Secretary of the Air Force, 2004a, 2004b; US Army War College, 2000; US Joint Forces Command, 2002, 2003a, 2003b, 2004). These documents—some of which were still in the draft stage—provided insight into Joint and Service thinking about future organizations and processes. It should be emphasized, however, that the set of staff actors and planning tasks identified through this review are notional in nature –that is, they reflect an amalgamation of emerging Joint and Service concepts outlined for future operations. In some cases, it became clear during this review that certain staff functions and positions were duplicative when Joint organizational structures and processes were compared side-by-side with their Service counterparts. It is further evident that considerable attention needs to be given to reconciling Joint and Service concepts if they are to produce an effective and efficient sensemaking process.

Nevertheless, it was possible to gain a general understanding of how sensemaking and knowledge management might be undertaken in a future JTF command system. As a result, the specific organizational structure that was adopted for the present modeling work largely follows the structure outlined for a future JJTF headquarters, but with key Service planners and experts assumed to be integrated in via a network-centric planning structure. As a result, the organizational process and staff structure that emerged within this project should not be interpreted as endorsing one particular command and staff arrangement over another. Rather, the emerging structure attempts to capture the essence of how a future JTF planning process might be functionally organized and staffed. Similarly, it should not be assumed that the modeled process and structure would reside within a single headquarters. Rather, the planning process and staff structure reflected in the current modeling project is, perhaps, best thought of as being geographically distributed across several headquarters operating in a network-centric fashion.

The communities of interest reflected within the notional JTF command system are organized by specific steps in the planning process. In turn, each step in the planning process potentially draws staff actor participants from the various working groups, cells, and boards nominally defined within the JTF command system. To illustrate this process, it is first useful to present an overview of the task structure reflected in the JTF model. As shown in Figure 11, knowledge creation within a future JTF command system begins with the receipt of mission orders from the National Command Authorities (NCA) and proceeds along a number of socio-cognitive steps to produce an initial Effects Tasking Order (ETO).[2] The ETO comprises the mission orders given to the set of component commands for execution. The ETO reflects the prioritized set of actions (organized by effects and battlespace targets) deemed necessary to achieve the mission objectives assigned to the JTF Commander.

[2] It should be noted that specific terminology such as "Operational Net Assessment" and "Effects Tasking Order" will come into and fall out of common usage as Joint and Service leadership changes over time. The terms adopted for use in this project reflect force development thinking circa 2004-2005.

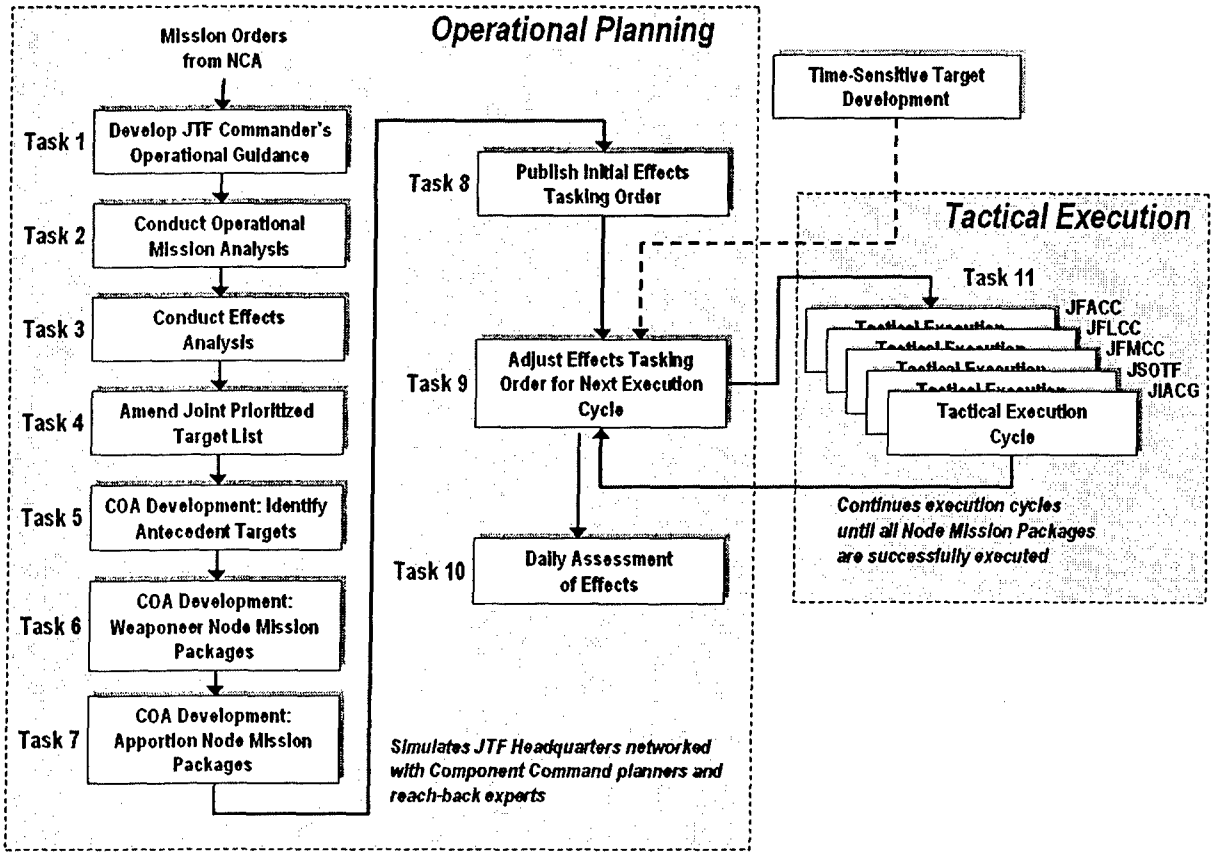



**Figure 11 Knowledge Creation Task Sequence within a Notional JTF Command System**

In a very real sense, the planning tasks listed in Figure 11 correspond to the hierarchy of knowledge elements described earlier in Figure 4. For example, development of the JTF Commander's operational guidance in Task 1 corresponds to the identification and prioritization of Desired Strategic Endstates and an associated set of Centers of Gravity. Conducting the operational mission analysis (Task 2) corresponds to the translation of Centers of Gravity into a constituent set of PMESII Functional Elements and an associated set of operational effects that are documented in terms of a Prioritized Effects List (PEL). The PEL, in turn, is translated through the effects analysis (Task 3) into a set of battlespace Node Mission Packages that are documented in terms of the Joint Prioritized Target List (JPTL). This process continues through Tasks 4-8 as the JPTL is amended, vetted, and adjusted to account for second-order effects and rules-of-engagement. At the same time, the Node Mission Packages are appropriately matched with action resources available and assigned for execution to specific component commands.[3] At the tactical execution level, the ETO is parsed by the component commands and executed in a cyclical fashion. During each execution cycle, the ETO is adjusted in two ways. First, time-sensitive target nominations (generated by the Joint Time-Sensitive Targeting Cell) are inserted into the cycle of operations –thus displacing resources previous earmarked for preplanned Node Mission Packages. Second, re-nominated Node Mission Packages are received from each of the

[3] The component commands include the Joint Force Air Component Command (JFACC), the Joint Force Land Component Command (JFLCC), the Joint Force Maritime Component Command (JFMCC), the Joint Special Operations Task Force (JSOTF), and the Joint Interagency Coordination Group (JIACG) that represents the other agencies and departments involved in the operational campaign.

component commands –representing missions that were either (1) scrubbed due to the unavailability of action resources or tactical intelligence or (2) assessed to be unsuccessful in achieving their desired effect. The execution cycles continue within each component command until all of the intended Node Mission Packages are successfully executed. Depending upon the phase of the operational campaign and the extent of the mission objectives, this cyclical process can take only a few days or it can extend over several hundreds of days.

To better understand how the model interprets each operational planning and tactical execution task, Figures 12-22 present a breakdown of each task in terms of the specific knowledge creation steps, staff actions, decisions, and events reflected in the model architecture. Within each of these diagrams, terms bolded and italicized correspond to specific knowledge elements explicitly portrayed in the simulated process.

| **Task Input** | ***Mission Orders*** containing summary list of ***NCA Objectives*** | |
|---|---|---|
| **Task Step** | **Description** | **Participants** |
| 1-1 | Receive ***Mission Orders*** and ***Operational Value Scores*** | JPG Admin Section |
| 1-2 | Identify restricted ***PMESII Functional Elements*** and ***Node Mission Packages*** | Rules-of-Engagement Working Group |
| 1-3 | Associate specific relevant ***Strategic Endstates*** with each ***NCA Objective*** | Joint Coordination Board |
| 1-4 | Associate specific relevant ***Centers of Gravity*** with each identified ***Strategic Endstate*** | Core Joint Planning Group |
| 1-5 | Compute ***Operational Value Score*** for each identified ***Center of Gravity*** | JPG Admin Section |
| 1-6 | Assemble and publish ***Commander's Guidance*** statement | JPG Admin Section |
| **Task Output** | ***Commander's Guidance*** containing list of associated ***Strategic Endstates***, associated ***Centers of Gravity***, and restricted ***PMESII Functional Elements*** and ***Node Mission Packages*** | |

**Figure 12 Develop JTF Commander's Operational Guidance (Task 1)**

| **Task Input** | ***Commander's Guidance*** | |
|---|---|---|
| **Task Step** | **Description** | **Participants** |
| 2-1 | Associate specific relevant ***PMESII Functional Elements*** with each identified ***Center of Gravity*** | Core Joint Planning Group |
| 2-2 | Identify which ***PMESII Functional Elements*** are restricted by rules-of-engagement | Rules-of-Engagement Working Group |
| 2-3 | Compute ***Operational Value Score*** of each identified ***PMESII Functional Element*** | Joint Fires & Effects Working Group |
| 2-4 | Assign operational effect to each identified ***PMESII Functional Element*** | Joint Fires & Effects Working Group |
| 2-5 | Publish the ***Prioritized Effects List*** | JPG Admin Section |
| **Task Output** | ***Prioritized Effects List*** that contains the set of identified ***PMESII Functional Elements***, vetted according to rules-of-engagement, and rank-ordered by ***Operational Value Score*** | |

**Figure 13 Conduct Operational Mission Analysis (Task 2)**

| Task Input | *Prioritized Effects List* | |
|---|---|---|
| **Task Step** | **Description** | **Participants** |
| 3-1 | Associate specific relevant ***Node Mission Package*** classes with each identified ***PMESII Functional Element*** | Joint Fires & Effects Working Group |
| 3-2 | Identify which ***Node Mission Package*** classes are restricted by rules-of-engagement | Joint Fires & Effects Working Group |
| 3-3 | Compute "primary" ***Operational Value Score*** for each identified ***Node Mission Package*** class | Joint Fires & Effects Working Group |
| 3-4 | Identify second-order effects on other ***PMESII Functional Elements*** associated with identified ***Node Mission Package*** classes | Blue / Red Cell |
| 3-5 | Identify which ***Node Mission Package*** classes are restricted by rules-of-engagement | Rules-of-Engagement Working Group |
| 3-6 | Compute "secondary" ***Operational Value Score*** for each identified ***Node Mission Package*** class | Joint Fires & Effects Working Group |
| 3-7 | Compute "total" ***Operational Value Score*** for each identified ***Node Mission Package*** class | Joint Fires & Effects Working Group |
| 3-8 | Cull redundant ***Node Mission Packages*** classes not needed to achieve influence of ***PMESII Functional Element*** | Joint Fires & Effects Working Group |
| 3-9 | Assign operational effect to each identified ***Node Mission Package*** class | Joint Fires & Effects Working Group |
| 3-10 | Publish ***Joint Prioritized Target List*** | JPG Admin Section |
| **Task Output** | ***Joint Prioritized Target List*** that contains a set of identified ***Node Mission Package*** classes characterized in terms of "primary" and "secondary" ***Operational Value Scores*** and vetted according to rules-of-engagement | |

Figure 14 Conduct Effects Analysis (Task 3)

| Task Input | *Joint Prioritized Target List* (as developed by JTF staff planning process) | |
|---|---|---|
| **Task Step** | **Description** | **Participants** |
| 4-1 | Receive ***Node Mission Package*** classes nominated by other agencies through the Joint Interagency Coordination Group | Joint Fires & Effects Working Group |
| 4-2 | Consolidate target nominations into the ***Joint Prioritized Target List*** | JPG Admin Section |
| **Task Output** | ***Joint Prioritized Target List*** (as amended by nominations from other agencies) | |

Figure 15 Amend Joint Prioritized Target List (Task 4)

| Task Input | Amended *Joint Prioritized Target List* | |
|---|---|---|
| **Task Step** | **Description** | **Participants** |
| 5-1 | Identify specific antecedent ***Node Mission Package*** classes required to be engaged prior to currently nominated target set | Joint Fires & Effects Working Group |
| 5-2 | Validate and reprioritize antecedent ***Node Mission Package*** classes as necessary to insure sequencing of engagement | JPG Admin Section |
| **Task Output** | Adjusted ***Joint Prioritized Target List*** (amended to include antecedent targets) | |

Figure 16 Course-of-Action Development: Identify Antecedent Targets (Task 5)

| Task Input | Adjusted *Joint Prioritized Target List* | |
|---|---|---|
| **Task Step** | **Description** | **Participants** |
| 6-1 | Identify ***Primary Action Class*** (and ***Component Command***) that produces desired effect for each nominated ***Node Mission Package*** class | Joint Fires & Effects Working Group |
| 6-2 | Estimate number of ***Sortie Packages*** required to achieve desired effect by ***Primary Action Class*** | Joint Fires & Effects Working Group |
| 6-3 | Identify, if applicable, ***Secondary Action Class*** (and ***Component Command***) that produces desired effect for each nominated ***Node Mission Package*** class | Joint Fires & Effects Working Group |
| 6-4 | Estimate number of ***Sortie Packages*** required to achieve desired effect by ***Secondary Action Class*** | Joint Fires & Effects Working Group |
| **Task Output** | Required ***Sortie Packages*** estimates (by ***Primary*** and ***Secondary Action Class*** and ***Component Command***) used to apportion targets to engagement resources | |

Figure 17 Course-of-Action Development: Weaponeer Node Mission Packages (Task 6)

| Task Input | Adjusted ***Joint Prioritized Target List*** and required ***Sortie Packages*** estimates | |
|---|---|---|
| **Task Step** | **Description** | **Participants** |
| 7-1 | Time-order Node Mission Package classes, based on Operational Value Scores (highest engaged first) | Joint Fires & Effects Working Group |
| 7-2 | Receive Sortie Package availability estimates for each Action Class | Joint Fires & Effects Working Group |
| ***Loop over execution cycles, beginning at D-Day and continuing until all target sets are engaged*** | | |
| ***Loop over Node Mission Package classes, beginning with highest priority*** | | |
| 7-3 | If Primary Action Class sortie packages are available, assign to Node Mission Package; otherwise, skip to Step 7-4 | Joint Fires & Effects Working Group |
| 7-4 | If Primary Action Class sortie packages are available, assign to Node Mission Package; otherwise, skip to end of loop | Joint Fires & Effects Working Group |
| 7-5 | Decrement available sortie packages, as appropriate, if they are assigned to Node Mission Package class | Joint Fires & Effects Working Group |
| ***End of Node Package class loop*** | | |
| ***End of execution cycle loop*** | | |
| **Task Output** | ***Daily Apportionment Assignment*** (assigns Node Mission Package class nominations to JFACC, JFLCC, JFMCC, JSOFT, and JIACG for each execution cycle) | |

Figure 18 Course-of-Action Development: Apportion Node Mission Packages (Task 7)

| Task Input | ***Daily Apportionment Assignment*** | |
|---|---|---|
| **Task Step** | **Description** | **Participants** |
| 8-1 | Assemble staff inputs for ***Effects Tasking Order*** | JPG Admin Section |
| 8-2 | Conduct JTF Commander's decision briefing | Core Joint Planning Group |
| 8-3 | Publish ***Effects Tasking Order*** to JFACC, JFLCC, JFMCC, JSOTF, and JIACG | JPG Admin Section |
| **Task Output** | ***Effects Tasking Order*** (initial assignment of ***Node Mission Packages*** by execution cycle to specific ***Action Classes*** and ***Component Commands***) | |

Figure 19 Publish Initial Effects Tasking Order (Task 8)

| Task Input | *Effects Tasking Order* (as amended and executed during previous execution cycle), re-nominated *Node Mission Packages* received from *Component Commands*, and *Time-Sensitive Target* nominations received from *JTF TST Cell* | |
|---|---|---|
| **Task Step** | **Description** | **Participants** |
| 9-1 | Receive re-nominated *Node Mission Packages* from JFACC, JFLCC, JFMCC, JSOTF, and JIACG (based on previous execution cycle results) | JPG Admin Section |
| 9-2 | Insert re-nominated *Node Mission Packages* into current *Daily Apportionment Assignment* | Joint Fires & Effects Working Group |
| 9-3 | Integrate time-sensitive *Node Mission Packages* into current Daily Apportionment Assignment (takes precedence over pre-planned target sets) | Joint Fires & Effects Working Group |
| 9-4 | Conduct JTF Commander's decision briefing | Core Joint Planning Group |
| 9-5 | Publish adjusted *Effects Tasking Order* | JPG Admin Section |
| **Task Output** | Adjusted *Effects Tasking Order* (amended to include re-nominated target sets and time-sensitive target sets) | |

Figure 20 Adjust Effects Tasking Order for Next Execution Cycle (Task 9)

| Task Input | Daily *Mission Effects Report* for *Node Mission Packages* executed during previous execution cycle | |
|---|---|---|
| **Task Step** | **Description** | **Participants** |
| 10-1 | Receive daily *Mission Effects Report* from JFACC, JFLCC, JFMCC, JSOTF, and JIACG | Effects Assessment Cell |
| 10-2 | Prepare summary of *Node Mission Package* progress | Effects Assessment Cell |
| 10-3 | Prepare roll-up summary of *PMESII Functional Element* progress | Effects Assessment Cell |
| 10-4 | Prepare roll-up summary of *Center of Gravity* progress | Effects Assessment Cell |
| 10-5 | Prepare roll-up summary of *Strategic Endstate* progress | Effects Assessment Cell |
| **Task Output** | Set of progress metrics that compare operational results against the "ideal world" scenario | |

Figure 21 Daily Assessment of Effects (Task 10)

| Task Input | Adjusted *Effects Tasking Order* (received from JTF Headquarters) | |
|---|---|---|
| **Task Step** | **Description** | **Participants** |
| 11-1 | Obtain actual *Sortie Package* availability for current execution cycle (for each *Action Class* conducted by the Component Command) | Component Command |
| *Loop over Node Mission Packages assigned to current execution cycle* | | |
| 11-2 | If (1) *Sortie Packages* are available and (2) *Current Intelligence* is available, execute *Node Mission Package* | Component Command |
| 11-3 | If (1) *Node Mission Package* successful and (2) *Mission Feedback* available, then annotate *Node Mission Package* as "completed" → go to Step 11-5 | Component Command |
| 11-4 | Otherwise, re-nominate *Node Mission Package* to JTF Headquarters | Component Command |
| 11-5 | Provide *Mission Effects Report* to Effects Assessment Cell (Task 10) | Component Command |
| *End of Node Mission Package loop* | | |
| **Task Output** | *Mission Effects Report* and re-nominated *Node Mission Packages* | |

**Note: This task sequence is repeated separately for JFACC, JFLCC, JFMCC, JSOTF, and JIACG**

**Figure 22 Tactical Execution Cycle (Task 11)**

The participants listed for each task in Figures 12-22 are drawn from specifically identified communities of interest defined within the JTF command system. Each community of interest—defined by Joint doctrine as a specific board, group, working group, or cell—is considered to be responsible for generating the knowledge elements that comprise the output of a specific planning task. Thus, the composition of these boards, groups, and cells determines the type (areas and levels) of staff actor expertise that is applied at each stage in the JTF planning process. The nominal composition of each board, group, working group, and cell was determined from a review of the Joint and Service force development and doctrinal literature referenced earlier. Again, it must be stated that the exact composition of these various boards and groups are subject to future definition by JTF Commanders. However, for the purposes of this project, they were assumed to be comprised of the specific staff actors and experts depicted in Figure 23.

Listed for each community of interest are both primary and supporting participants. Following the logic reflected in the modeling of each knowledge creation task, the task is initially undertaken by the set of primary participants. As illustrated in Figure 24, the knowledge creation task is executed (1st iteration) using the collaboration strategies and obstacle factors outlined earlier. At this point, the model logic assumes that the JTF Commander (or his designated Knowledge Management Officer) would review the progress of the task in terms of the extent of knowledge elements "recognized" by the set of primary participants. If it is determined that significant gaps exist within the task's knowledge product, then the collaboration process is repeated a second time (2nd iteration) with the supporting participants added to the process. By adding the supporting participants, the model logic assumes that re-execution of the knowledge creation task will benefit from additional areas or levels of expertise. Computationally, this test involves comparing the percentage of "missing" knowledge elements (compared to the "ideal world" scenario) against a threshold value specified as user input to the model. Currently, the

user can set this value anywhere in the range 5-40%, with lower values demanding a more aggressive knowledge creation policy.

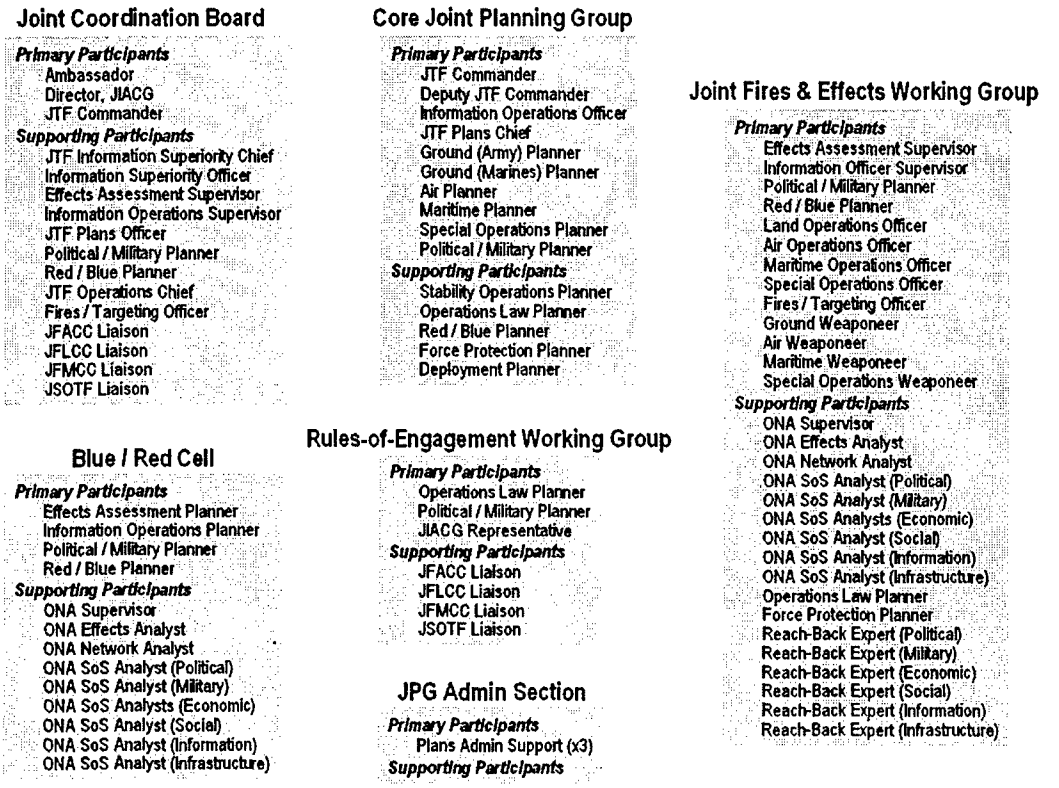



**Figure 23 Composition of Boards, Groups, Working Groups, and Cells Reflected in the Model Architecture**

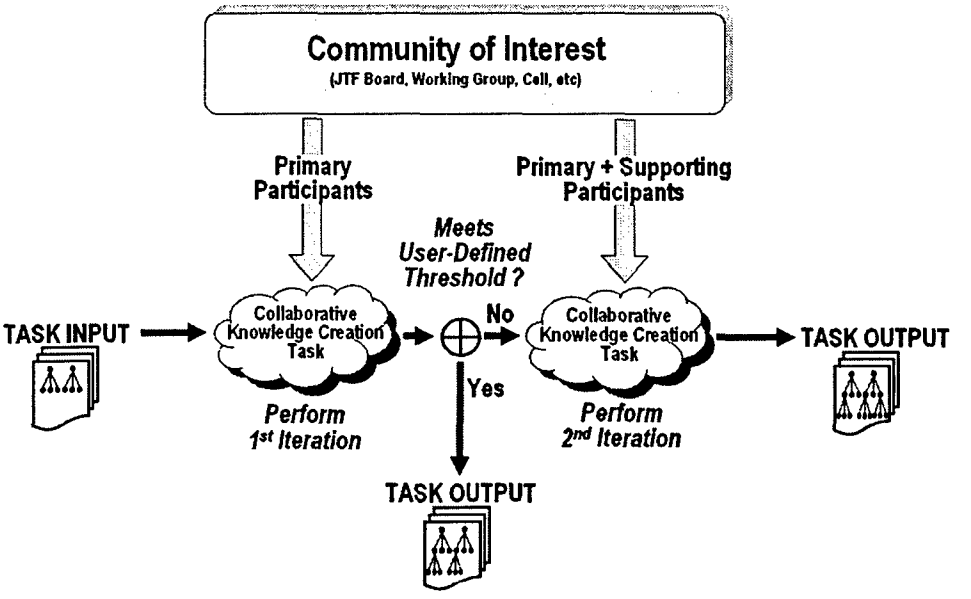



**Figure 24 Knowledge Threshold Management Process**

## THE ANALYSIS OF SENSEMAKING AND KNOWLEDGE MANAGEMENT AS A SYSTEM OF SYTEMS PROBLEM

As noted earlier, the modeling of sensemaking and knowledge management within a JTF command system is best approached as a system-of-systems problem. Specifically, these processes involve cognitive systems, operational systems, social systems, and organizational systems –all working toward the common objective of translating high level command intent into a detailed set of action directives. The preceding section of this report has outlined the key elements of each of these systems as they are represented in the simulation model that emerged from this project. Addressed next is the matter of how these modeling features can be employed to study the sensemaking and knowledge management performance of a JTF command system.

### A System of Systems Model

As shown in Figure 25, an organization such as a JTF command system can be viewed as a system of systems model –with each component system interacting with and exerting influence upon the other systems. Within the cognitive system, individual staff actors within the JTF command system engage in the framing of available information within their personal experience and expertise to form actionable knowledge. Specifically, this knowledge is defined by the specific mental association linkages that are formed between the various levels of the JTF problem space (see Figure 4). The individual actors include those specific staff members within the JTF command system that participate in the joint planning process (see Figure 23).

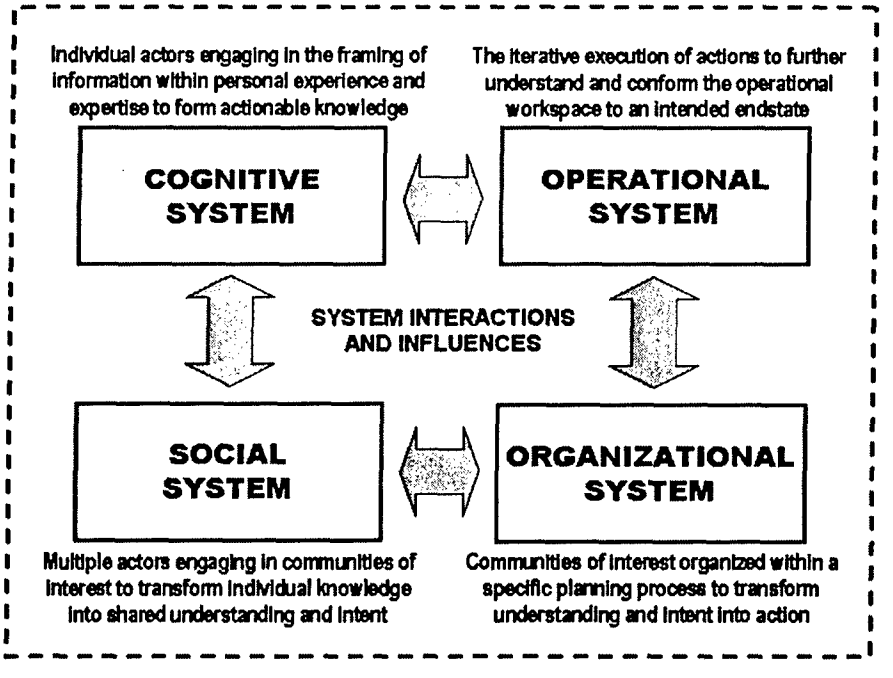



Figure 25 System of Systems Model

Within the social system, designated sets of actors engage in communities of interest to transform individual knowledge into shared understanding and intent. Specifically, these communities of interest correspond to the various boards, groups, working groups, and cells defined within the JTF command system (see Figure 23). The relative availability and contribution of specific actors depend upon the current workload and the set of collaboration

obstacles affecting each actor (see Figures 9 and 10). The manner in which individual knowledge is integrated within each community of interest is determined by the mode of collaboration established for that community (see Figure 7).

Within the organizational system, communities of interest are task organized within a specific planning process or planning rhythm to transform shared understanding and intent into a set of action directives. Specifically, the operational planning rhythm consists of a sequence of collaborative knowledge building tasks that decompose high level command intent into desired endstates, centers of gravity, supporting PMESII functions, and battlespace node mission packages (see Figure 11). The resulting knowledge space is reflected in the form of an ETO that specifies the operational missions to be executed by each component command within the JTF command system.

Within the operational system, the directed missions specified in the ETO are carried out over a number of daily execution cycles, with the total number of cycles determined by the mission requirements and the availability of mission resources. Collectively, the set of missions serves to conform the battlespace to a set of desired endstates. At the same time, these missions provide feedback regarding the state of the battlespace –thus providing the JTF command system with the ability to adjust its understanding and redirect missions as time goes on.

**Modeling Representation and Measures of Performance**

Depicted in Figure 26 is the level of progress achieved during *Project Gnosis* regarding the representation of this system of systems model in terms of working simulation software. Three of the component systems—cognitive, social, and organization—are shown as completely represented, at least in terms of first-order effects and linkages. The operational system is shown as partially represented since the original scope of *Project Gnosis* precluded the detailed modeling of combat and other actions within the battlespace.

Figure 26 also illustrates the types of model inputs over which the analyst has control. Specification of these inputs allows the model analyst to configure the JTF command system in various ways –thus allowing the capability to examine a range of personnel, technological, organizational, and process issues associated with the design and functioning of a future JTF command system.

***Cognitive System Representation*** First-order representation of the cognitive system includes the detailed specification of individual actor knowledge in terms of the Leontief input-output matrices that specify their likelihood of associating knowledge elements across the decomposition of the JTF problem space. By adjusting these matrix values, the model analyst can specify the areas and levels of PMESII expertise characterizing each specific actor defined within the JTF command system. In turn, these matrix values are stochastically used by the various knowledge creation tasks in the model to determine whether specific knowledge elements of the overall JTF problem space are "recognized" during a given execution run of the simulation model. The model analyst controls the degree of process variability or randomness by specifying the standard deviation of the normal distribution function used in this stochastic process. Finally, the model analyst can specify the available time allowed for this cognitive recognition process—*i.e.*, deliberate versus expedient—by adjusting the recognition threshold value used in this stochastic process.

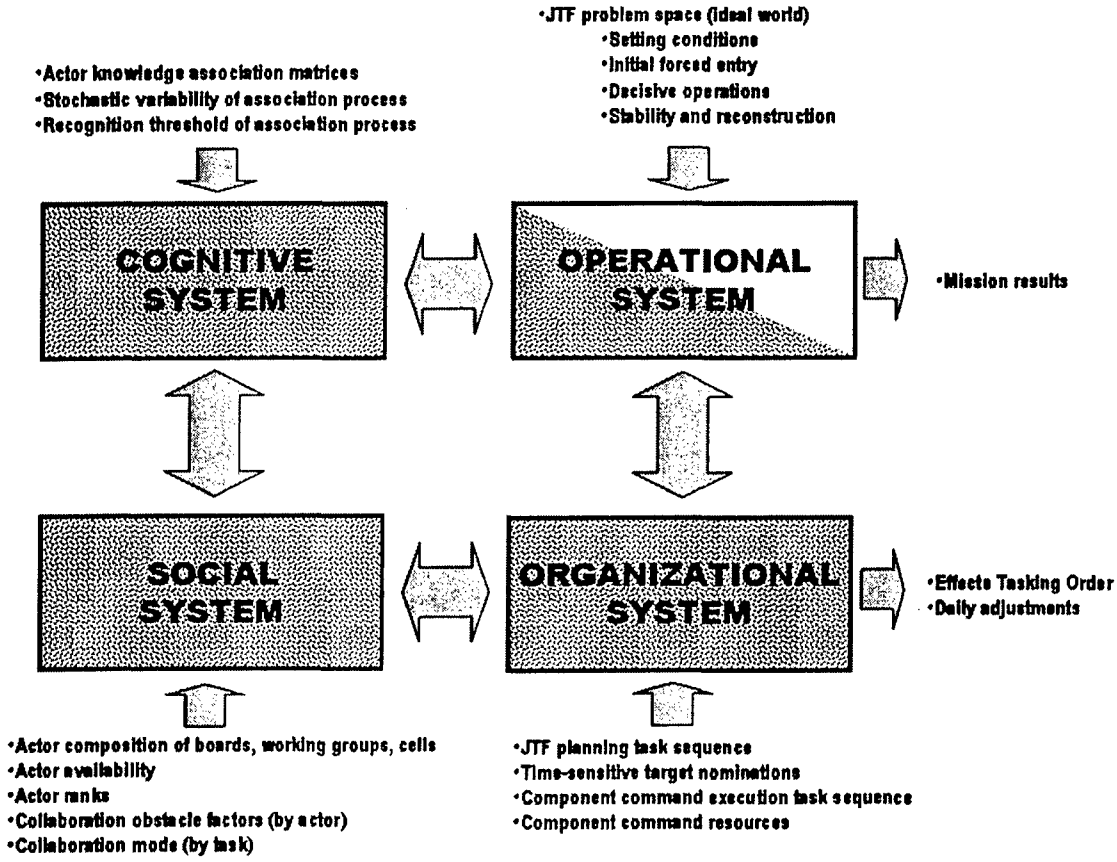



Figure 26 System of Systems Model Representation in Project Gnosis

***Social System Representation*** First-order representation of the social system includes the detailed specification of which actors contribute their individual knowledge to each knowledge creation task defined within the overall JTF planning process. The assignment of actors to specific steps in the planning process is based on a nominal definition and composition of the various boards, working groups, and cells defined within the JTF command system. The nominal definition and composition of planning boards, working groups, and calls is based on a review of Joint and Service literature available at the time of this project. In some cases, the project discovered inconsistencies across this literature regarding the location and composition of these communities of interest. Reconciling these inconsistencies remains the responsibility of the Joint and Service commands. For the purpose of this project, it was assumed that both Joint and Service personnel would collaboratively contribute to the JTF planning process and that this process would be integrated across a networked command system.

For modeling purposes, it was assumed that certain actors would be designated as "primary" while other actors would be designated as "supporting." Each knowledge creation task is initially executed with only primary actors. Task output is then compared in the model against the "ideal plan" based on perfect PMESII knowledge. If the level of "missing knowledge elements" exceeds a certain threshold (specified by the model analyst), the task is re-executed with both primary and supporting actors. By adjusting the threshold value, the model analyst can account for different management oversight policies—e.g., deliberate versus expedient—within the JTF

planning process. Actor availability is determined as a function of current workload and scheduled availability of each actor (analyst input). In addition, the model analyst specifies the actor rank and a set of six collaboration obstacle factors for each actor. Specification of these social process variables determines the relative ability of each actor to effectively contribute their individual knowledge in a given planning task. Finally, the model analyst can specify through the type of collaboration process defined for each knowledge creation task –authoritative, inclusive, democratic, or hybrid. The mode of collaboration, together with actor rank and the set of collaboration obstacle factors, determines the manner in which individual knowledge is combined to produce group consensus knowledge in each planning task.

***Organizational System Representation*** First-order representation of the organizational system includes the detailed definition and sequencing of the specific knowledge creation and vetting tasks defined within the JTF planning process. The nature and sequence of these tasks are specified in the model design architecture and are not subject to modification by the model analyst. The nominal definition of the task sequence comprising the JTF planning process is based on a review of Joint and Service literature available at the time of this project. In some cases, the project discovered redundant knowledge creation tasks across the different Joint and Service headquarters described in this body of literature –*i.e.*, the same tasks were described as being performed at both a JTF headquarters and a component command headquarters. Reconciling these redundancies remains the responsibility of the Joint and Service commands. For the purpose of this project, it was assumed that a single planning process would be executed with each headquarters contributing across a networked command system. This planning process serves to produce the baseline ETO that is passed down to the component commands for execution. The ETO contains a prioritized set of node mission packages that are assigned—by node mission type—to each component command.[4] In effect, this node mission package list represents the Joint Prioritized Target List (JPTL) that would be produced by the JTF command system.

Execution of the JPTL is governed by the component command task sequences that are incorporated into the model architecture. These tasks are not subject to modification by the analyst. The number of execution cycles required to accomplish the prioritized set of node mission packages reflected in the JPTL depends upon two additional model inputs. The first of these model inputs consists of the engagement resources allotted daily to each component command (specified by the model analyst). The execution task sequence assigns resources according to node mission package type and priority. Typically, several execution cycles will be required to fulfill the entire set of node mission package nominations included in the JPTL. Mission outcomes are stochastically determined (modeled only at the level of mission success or failure), based on the likelihood of available intelligence and weaponeering effects (model input). Unsuccessful missions are re-nominated and placed back on the JPTL for consideration in future execution cycles. This process continues until either (1) all node mission package nominations have been successfully executed or (2) the component commands have exhausted their engagement resources. The second type of model input reflects the time-sensitive target (TST) nominations assumed to be generated by a TST Cell within the JTF command system (not represented in detail in the mode architecture). These targets are represented as high priority

[4] The component commands reflected in the model architecture include the Joint Force Air Component Command, the Joint Force Land Component Command, the Joint Force Maritime Component Command, the Joint Special Operations Task Force, and the Joint Interagency Coordination Group.

node mission packages that divert engagement resources away from other preplanned missions during a given execution cycle.

***Operational System Representation*** First-order representation of the operational system includes the specification of the JTF problem space in terms of National Command Authority objectives, desired strategic endstates, centers of gravity, supporting PMESII functions, and node mission packages ideally associated with an operational campaign. For this project, the problem space was depicted as a four-phase operational scenario that included (1) setting conditions, (2) initial forced entry, (3) decisive operations, and (4) stability and reconstruction. The elements comprising this problem space are notional, but considered representative of the breadth of elements addressed in recent operational campaigns such as Operation Iraqi Freedom. Within the overall model architecture, definition of the JTF problem space provides the structural template for building the knowledge association matrices associated with each simulated actor. That is, the cells within the staff actor knowledge matrices uniquely correspond to the relationships perceived to exist between specific knowledge elements at each level of the JTF problem space. As noted earlier, this structure is considered from an "ideal world" perspective, whereas the cell values specified by the model analyst in each matrix reflect the imperfect knowledge of the actors.

The present model architecture allows for the modification of this scenario (*i.e.*, the addition or deletion of specific knowledge elements); however, the model analyst must take considerable care to insure that any changes are consistently reflected in the knowledge matrices defined for each actor. Since modifying the knowledge matrix templates can be a tedious undertaking (and one that requires a good understanding of the model's software architecture), it is likely that the model analyst will chose to employ a fixed scenario over the course of an analytic investigation.

In terms of executing the ETO, the resulting JPTL produced by the simulated JTF command system corresponds to the structure defined in the JTF problem space. Based on the various factors influencing the organization's ability to bring appropriate staff expertise to bear in the planning process, the JPTL will likely only partially address this problem space. That is, the imperfect knowledge of specific actors will combine with the host of collaboration obstacles and other factors to create gaps and errors in the shared understanding and intent created by the simulated planning process. Gaps will be reflected in the failure of the JPTL to identify specific node mission packages for execution. Errors will be reflected in the inadvertent inclusion of restricted nodes in the JPTL. Together, measurement of these gaps and errors (with respect to the "ideal world" campaign plan designed by the model analyst in the construction of the JTF problem space) will provide the basic means for assessing JTF command system performance.

***Limitations of the Operational System Representation*** As noted earlier, *Project Gnosis* did not address complete representation of the operational system. While the model architecture provides for the basic execution of an ETO by component commands, there are a number of acknowledged shortcomings in the present simulation model. The present modeling project was envisioned as a proof-of-principle research effort designed to show how actionable knowledge is collaboratively constructed within an organization involving scores of experts each holding unique areas of knowledge, a specific sequence of planning tasks that combines these actors within an overall planning rhythm, and a specific set of collaboration obstacles that influence the performance of this planning rhythm. Many other aspects of sensemaking remain to be addressed

in terms of how they might be effectively represented in an analytic model. Summarized below are the major areas of limitation identified during *Project Gnosis*:

- The actual state of the battlespace is not explicitly represented in the present simulation model. Rather, the model keeps track of only successful and unsuccessful mission executions. Successful mission executions are presumed to produce an intended effect on specific battlespace nodes, whereas improperly vetted missions are presumed to produce various types of unanticipated negative consequences. The details of these operational effects are not explicitly portrayed in the present simulation model. It is envisioned that such detail might be handled in a separate combat simulation model, and that this combat model would be integrated with the present work in a future confederation of interoperable simulation models.
- The process of building situation understanding through the analysis and synthesis of battlespace sensor data and intelligence reports is not explicitly represented in the present simulation model. Such a process would serve to continuously update and refine the JTF problem space as new aspects of the battlespace became better understood. It is also acknowledged that representation of this aspect of sensemaking would focus greater attention on the specific details of information flow within a JTF command system. Rather, the present model is limited by a fixed JTF problem space that is assumed to have been constructed with prior intelligence. It is envisioned that future research might extend the present work to address the process of dynamically updating and refining the staff actors' understanding of the JTF problem space.
- The process of staff learning is not addressed in the present simulation mode. Here, staff learning is considered to be the process by which the individual staff knowledge matrices are updated to reflect participation in the different community of interests defined within the JTF command system. For example, one strategy might be to replace each staff actor's individual knowledge matrices with the group consensus matrices that are constructed during the different planning tasks. Updating individual staff actor matrices in this fashion presumes that the individuals learn from and adopt the group consensus knowledge that is built during the planning process. Staff actors would then benefit from this learning by being able to apply the updated knowledge matrices in future planning tasks. Since the present model architecture does not provide for a series of repeated planning tasks, the issue of staff actor learning is a mute point. It is envisioned that future research might extend the present work to address the mechanisms and implications of such learning.
- There are many other aspects of planning within a JTF command system—*e.g.*, logistics planning, personnel planning, command and control planning, and so forth—that are not addressed in the present simulation model. It is acknowledged that these activities constitute important areas of JTF and Service staff functioning and that they would have a significant impact on overall operational effectiveness. It is further acknowledged that their representation might use many of the same constructs already included in the present model. However, they were considered to be beyond the scope of the present proof-of-principle research.

## MODEL SOFTWARE

The resulting model architecture was translated into executable software by Micro Analysis & Design, Inc.[5] (MA&D), using the *Micro Saint Sharp*© (*MS#*) programming environment. The executable software runs on a desktop PC and a typical model run requires several minutes to complete, depending upon the speed and memory of the PC and various options set within the model input data. To assist the analyst in running the simulation model, a complete User's Guide is provided as a separate document from this technical report. The user guide describes the general software architecture of the simulation model; the graphical user interface for setting input parameters; a summary of the model output reports available to the analyst; a detailed description of the model software objects, variables, functions, events, and knowledge matrices; and a summary of the task network comprising the JTF planning and execution sequence. A brief description of these elements is presented below.

### General Software Architecture

While the software was developed within the *MS#* modeling environment, the complexity of the knowledge creation representations required the development of a customized plug-in—or Dynamically Linked Library (dll)—that contained a number of customized data structures, algorithms, and user interface options. This GNOSIS.dll is loaded prior to model execution and enables the user to easily access and modify those input parameters commonly adjusted between model runs. Other model input data—e.g., scenario data describing the JTF problem space—is entered via *MS#* scenario events. Two files are necessary to maintain and run the model: the GNOSIS.dll file just discussed and the *MS#* model file. The MS# model file can be saved by the analyst to preserve specific changes in the input data for future runs. Modeling convention suggests that these saved files should be uniquely labeled using the following type of naming format: "GNOSIS_*modeldate*_Master.saint", where *modeldate* is the date on which the changes were created by the analyst. As a precaution, the GNOSIS.dll plug-in allows the analyst to restore the model input parameters to their original default state defined within the current project.

### Graphical User Interface

A customized graphical user interface (GUI) is provided to facilitate modification of the more commonly varied input parameters. These parameters appear to the analyst in tree view form, as illustrated in Figure 27. Each of the tree branches can be expanded to allow access to five subdirectories of input parameters:

- *Working Groups* This includes the assignment of specific staff actors to each of the defined communities of interest (working groups) within the simulated JTF command system.
- *Actors* This includes the specification of staff actor attributes that include staff actor rank, the unique collaboration obstacle factors for each actor, and the definition of the knowledge matrices for each actor.

[5] Just prior to the completion of *Project Gnosis*, Micro Analysis & Design was incorporated as an operating division of Alion Science & Technology Corporation.

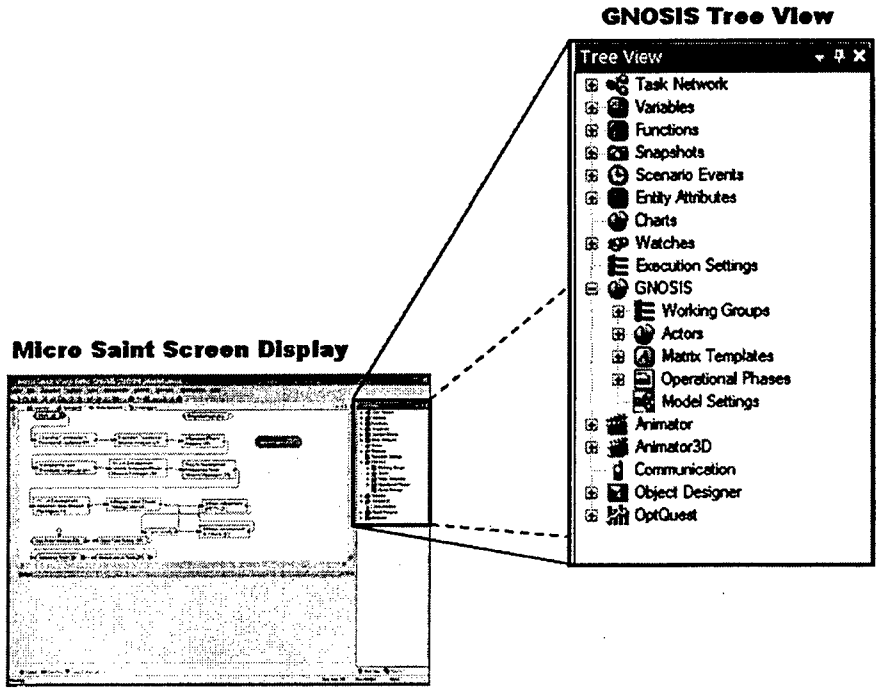



**Figure 27 GNOSIS Tree View of Input Parameters**

- *Knowledge Matrix Templates* This includes the specification of the knowledge matrix indices used for defining the actor knowledge matrices.[6]
- *Scenario Phases* This includes the specification of the tree structure of knowledge elements defining the JTF problem space that extends from the high level NCA Objectives down through the low level Node Mission Packages.[7] The current scenario configuration includes four phases: (1) setting conditions, (2) initial forced entry, (3) decisive operations, and (4) stability and reconstruction.
- *Model Settings* This includes a variety of miscellaneous settings required for each model run, including the *Knowledge Threshold* (sets the "detection" threshold used with the knowledge matrices), *Knowledge Collaboration Variability* (sets the standard deviation of the normal distribution function used to generate specific instances of the knowledge matrices), *Knowledge Threshold Gap* (required percentage of knowledge elements to be identified, below which the model triggers a second execution of a knowledge creation task), *Task Time Factor* (value used to set task completion time), *Phases to Execute* (specifies which phases of the operational scenario to include in a given model run), *Use Perfect Knowledge* (sets all knowledge matrix values to 1.0 for a given model run), and *Run Tactical* (specifies whether or not to include the Tactical Execution portion of the model in a given model run).

[6] The analyst is cautioned against making changes to the knowledge templates unless they possess a detailed understanding of how these templates affect the construction and use of the staff actor knowledge matrices in the model.

[7] The analyst is cautioned against making changes to the knowledge element tree structure unless they possess a detailed understanding of how this tree structure shapes other required model input.

### Model Output Reports

The model provides three types of output that may be specified by the analyst. During model execution, the *MS#* modeling environment provides for a string of *Print Outputs* that are written to describe the state of specific constructs and the output of specific tasks as they are performed. This output listing can be quite long, can significantly slow model execution speed, and is typically used for diagnostic and debugging purposes. The analyst has the option of turning off much of this output. A more useful form of output report is the set of specific *Snapshots* that can be generated and stored in a file for later export (*e.g.*, to MS Excel©) and analysis. These snapshots capture and summarize important data for each knowledge creation task, the operational value computation tasks, and the Node Mission Package execution results in a given model run. A list of snapshot report types available to the analyst are summarized in the User's Guide. They address such details as actor participation, knowledge element recognition and prioritization within the produced ETO, the progress of executing the ETO, sortie resource allocations, and various other details that allow the analyst to investigate the impact of various cognitive and social factors on JTF command system performance. More importantly, the analyst can specify for each model run which of the snapshot reports to produce –thus providing both analytic flexibility and the ability to control model execution time. A third type of model output is reflected in the knowledge animation displays that can be viewed during model execution. This type of plug-in allows the analyst to expand the JTF problem space tree structure and track the status of various knowledge elements during model execution. Circular icons adjacent to each knowledge element in the tree structure will change status color as they are either unprocessed (blue), recognized by the staff actors (green), overlooked by the staff actors (red), and/or restricted on the basis of rules of engagement (yellow). Such a display provides a visual indication of the knowledge creation patterns within the JTF planning rhythm as it unfolds.

### GNOSIS Model Objects, Variables, Functions, Events, and Knowledge Matrices

The MS# modeling environment facilitated construction of the simulation model in terms of the latest state-of-art object-oriented programming techniques. In addition to the GNOSIS.dll plug-in described above, the resulting software code incorporates a variety of data constructs and algorithms that are described in detail in the User's Guide. These features include

- *Model Objects* – custom-designed software objects (groupings of related data) that can be treated as variables throughout the simulation model,
- *Model Variables* – various types of strings, hash tables, Boolean tables, and arrays that represent different types of constructs within the simulation model,
- *Model Functions* – various types of customized algorithms that perform different computational operations on the defined variables throughout the simulation model,
- *Entity Attributes* – sets of defined attributes that are used to track the dynamic status of missions, actors, and other entities represented in the simulation model,
- *Scenario Events* – a set of called functions used to initialize model variables at the beginning of each run, and

- *Knowledge Matrices* – specifically defined arrays used in the simulation model to either (1) represent the associational knowledge of individual staff actors or (2) globally represent the state of knowledge construction at different stages in the JTF planning process.

The simulation model keeps track of thousands of data elements during the course of a single model run. In terms of computational complexity, it is the most complex model yet constructed in the MS# programming environment.[8]

### Micro Saint Sharp Task Network

The *MS#* programming environment was selected for use in Project Gnosis because it provides a state-of-art capability for building task-based process simulation models. Using this modeling environment, software engineers from MA&D translated the model architecture designed by EBR into a *Micro Saint* task network. This task network can be viewed during model execution through a series of hyperlinked network graphs. The top-level network diagram is depicted in Figure 28.

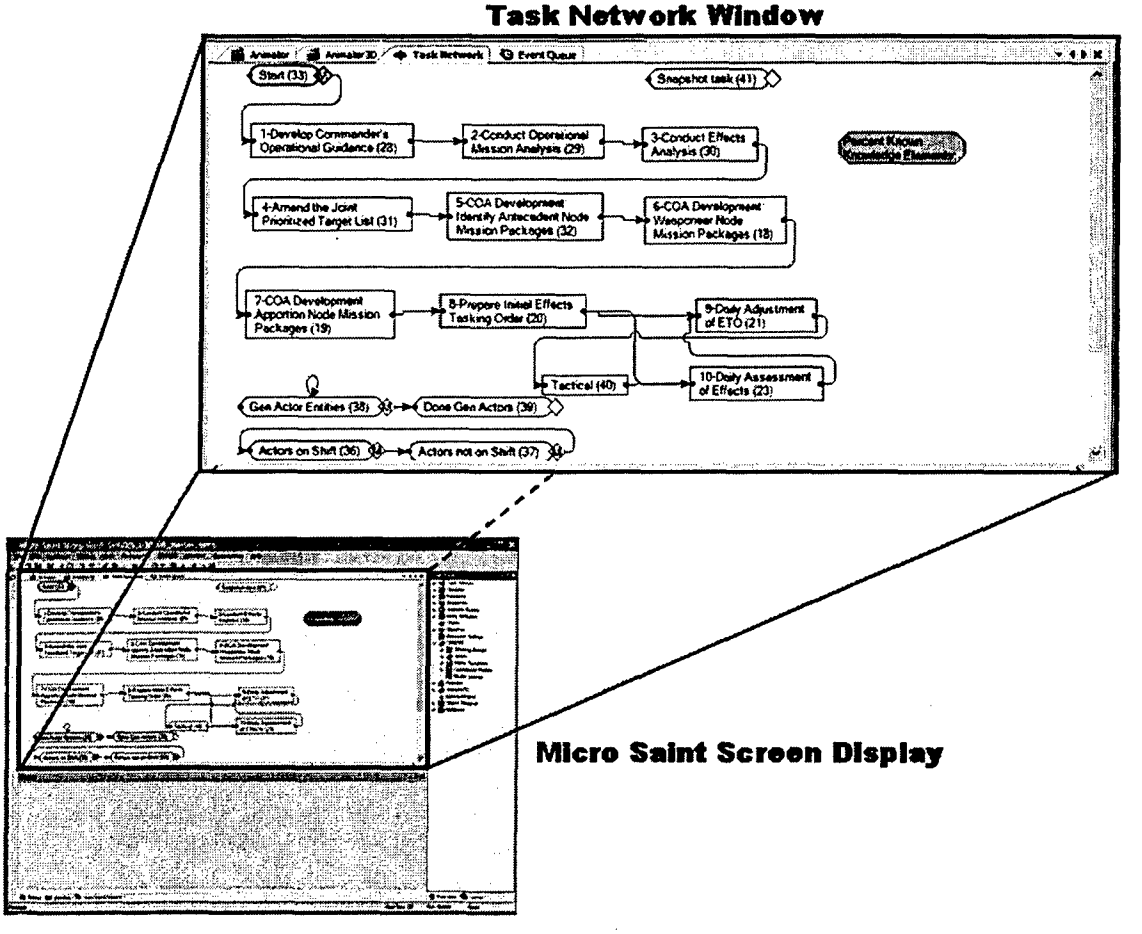



**Figure 28 Micro Saint Task Network**

By double clicking the mouse cursor on a specific task box, the analyst can open a new window that expands a detailed view of the steps and procedures contained in the selected task. By

[8] Based on programmer comments provided by Micro Analysis & Design.

successively doubling clicking on these displays, the analyst can drill down to the actual software code underlying the task network. This potentially allows the analyst to edit any portion of the *Micro Saint* task network; however, it is strongly cautioned that changes to the model software code should be undertaken only by someone deeply familiar with the model architecture.

# EMPLOYING THE MODEL AS AN ANALYTIC TOOL

Having described the conceptual design and software implementation of the JTF command system simulation model, the final section of this report discusses the use of this model for investigating various types of systems engineering issues. The first part of this section presents an overview of the types of analytic strategies that might be employed with the model. This is followed by a brief illustration of the type of parametric model runs that can be made with the model. A broad range of parametric investigations can be undertaken with the model, depending upon the specific types of issues being studied and the imagination and creativity of the analyst. The examples illustrated in this section reflect only a small sampling of what is potentially possible.

## ANALYTIC STRATEGIES FOR USING THE MODEL

Models such as the one developed in this project are a means of investigating certain issues rather than an end unto themselves. Consequently, it is important to consider use of the model in the broader context of an overall investigational strategy. For the study of knowledge creation and management within an organization such as a JTF command system, this context potentially addresses multiple levels and dimensions of systems analysis. A general depiction of these levels and dimensions is illustrated in Figure 29.

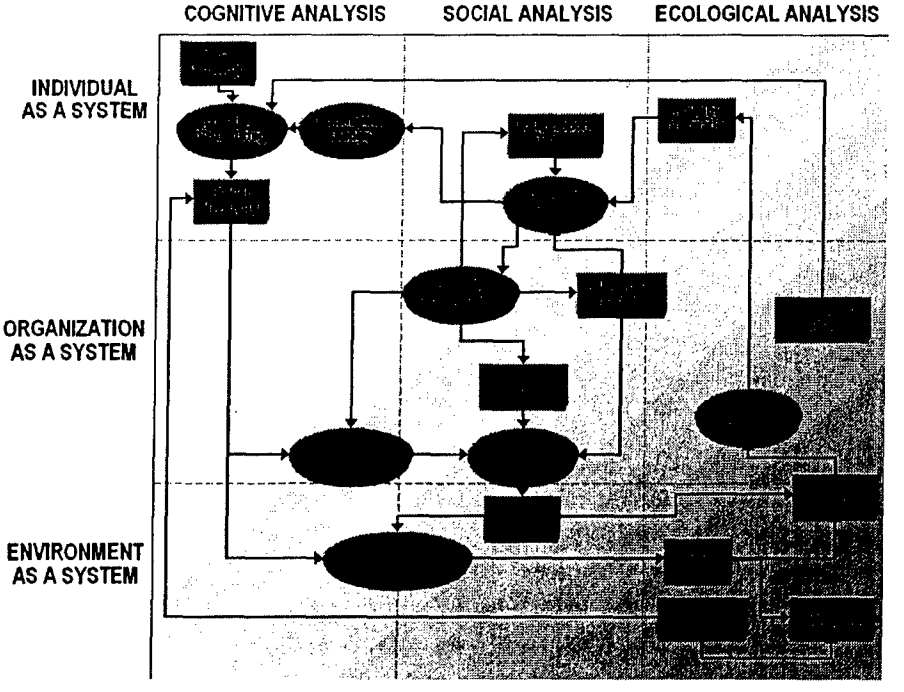



**Figure 29 Levels and Dimensions of Analysis**

As seen in this figure, the complexity of the knowledge creation and management process within an organization provides the analyst with any number of areas within which to focus an investigation. Each of these areas reflects different opportunities for system intervention and performance improvement. The range of system interventions potentially of interest to the analyst is depicted in Figure 30.

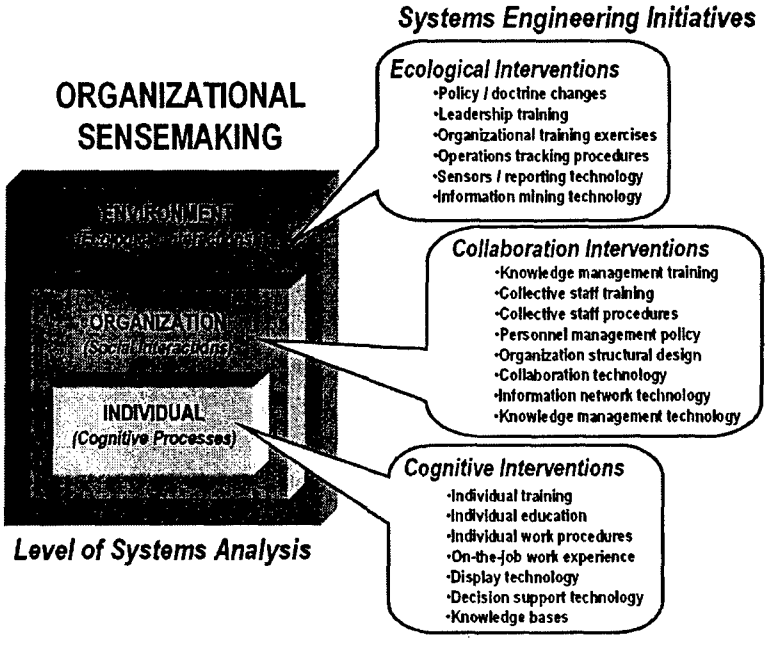



**Figure 30 Types of System Interventions**

Depending upon the nature of the systems intervention envisioned—*e.g.*, information technology, personnel training, process reengineering—the analyst will likely center his attention on a particular system level and dimension of analysis. At the same time, the analyst must properly consider the broader context of how this process operates across other levels and dimensions. These two competing factors—the need to focus on a limited set of intervention variables while accounting for a host of other variables—reflects the motivation for *Project Gnosis*. That is, the project was undertaken with the desire to address—at a first-order level of detail—a broad range cognitive, social, organizational, technological, and ecological variables and processes within the confines of a unified analysis. At the same time, it was acknowledged that the analyst would likely be interested in examining the effects of only a limited number of the variables at any given time.

## A Simple Process Paradigm and a Myriad of Complex Interactions

The basic paradigm reflected in the current model is this: actionable knowledge is created by bringing together both expertise and situational awareness in a purposeful and systematic manner. Here, expertise is reflected in the specification of staff actor knowledge. Awareness is reflected (to a degree) in the specification of the knowledge element hierarchy structure. The manner in which these two elements are brought together in a purposeful and systematic manner is reflected in the modeling of the planning task sequence and the modeling of staff actor collaboration. Beyond this simple description, everything else is just a matter of detail. Yet, while the model reflects a fairly simple process paradigm, the level of detail specified in the model provides for the dynamic interaction of thousands of data elements. Thus, from a modest

paradigm comes the potential for enormous complexity –so much complexity that the analyst will find it difficult to keep track of all of these interactions and their influence on overall system performance. Thus, a few words of caution are in order.

- Many different variables can affect a specific aspect of performance. For example, lowering a specific staff actor's level of expertise (*i.e.*, reducing the actor's association probability values within a specific knowledge matrix) might or might not result in fewer knowledge elements being recognized in a given model run. Factors that could actually increase the recognition of knowledge elements include (1) other actors possessing equal or higher association probabilities for the same knowledge elements, (2) the use of supporting staff actors in a given knowledge creation task when the quality of the overall product drops below a specified threshold, and (3) the failure of staff to earlier recognize a root branch within the overall knowledge space that corresponds to the specific staff actor's area of expertise –thus negating his contribution altogether.
- Processes reflected in the model can combine in complex ways. For example, lowering one of the collaboration obstacle factors for a specific actor might or might not result in fewer knowledge elements being recognized in a given model run. One situation that could actually increase the recognition of knowledge elements includes specifying a democratic collaboration model that uses the numerical average of all participating actors –hence, when an actor with medium or low knowledge is removed, other actors with higher knowledge are afforded more influence. Another situation might involve the retriggering of a knowledge creation task with additional supporting actors when the removal of a primary actor lowers the quality of the knowledge product below a specified threshold.
- Stochastic processes within the model can produce performance variability. Thus, when the model is specified to run with non-zero standard deviation values, the analyst will need to assess performance on the basis of statistically analyzing multiple runs.

The complexity of the model represents a challenge for the analyst, requiring careful attention to the construction of input data to insure that intended input changes and performance effects are isolated and not confounded by other aspects of the model. While this can be frustrating for those who do not possess an intimate and detailed understanding of the model architecture, such complexity is nevertheless a reflection of cognition and social interactions in the real world. At its heart, the study of knowledge creation and management on the scale of an entire organization is a complex and tedious undertaking.

**Analytic Avenues**

To help analysts in employing this model, the following guidance has been developed regarding the organization and specification of input data. This guidance reflects a number of "analytic avenues" that describe how different types of systems engineering issues might be addressed parametrically through different aspects of model input. This guidance is illustrated in Figure 31.

| SYSTEMS ENGINEERING ISSUE | AREA(S) OF THE MODEL INPUT TO PARAMETRICALLY CHANGE | EXPECTED MODEL BEHAVIORS |
|---|---|---|
| Influence of staff training and experience in a specific PMESII area | • Staff actor knowledge association matrix cell values<br>• Staff actor cognitive capacity value | • Higher cell values increase problem space recognition performance<br>• Lower values reduce likelihood of staff actor participation / contribution |
| Influence of staff rotation frequency | • Staff actor trust and/or social currency values | • Lower values reduce likelihood of staff actor participation / contribution |
| Influence of deliberate versus expedient planning cycle | • Knowledge recognition threshold setting<br>• Task completion time | • Lower threshold increases problem space recognition performance |
| Value of adding knowledge management oversight | • Knowledge threshold gap setting | • Smaller gap increases likelihood that task is re-executed with supporting actors |
| Influence of network connectivity | • Staff actor connectivity value | • Lower values reduce likelihood of staff actor participation / contribution |
| Influence of collaboration tools | • Staff actor expressive power value | • Lower values reduce likelihood of staff actor participation / contribution |
| Impact of varying composition of board, working group, or cell | • Staff actor availability | • Lower availability reduces likelihood staff actor is available for task |
| Influence of different collaboration modes | • Task collaboration model<br>• Staff actor rank | • Modifies the relative influence of each staff actor's unique knowledge |
| Variability of collaboration effectiveness | • Knowledge collaboration variability setting | • Non-zero standard deviation produces stochastic variability in model results |
| Variability of staff performance across different phases of operation | • Selectively run model with different scenario phases | • Staff actor recognition performance varies across phase according to PMESII knowledge |
| Execution of Effects Tasking Order | • Action resources available to each component command | • Greater availability reduces number of tactical operation cycles needed for ETO execution |
| Impact of time-sensitive targets | • Time-sensitive target list | • TSTs displace previously planned targets |

Figure 31 Exploring Different Systems Engineering Issues with the Project Gnosis Model

Given the complexity of the model and the potential for one set of input changes to interact with other changes, the analyst is strongly cautioned to approach each series of model runs in a careful and systematic manner. It is also recommended that any analysis employing this model begin by examining the effects of different changes in an isolated fashion. After the influence of each change on model behavior is understood, then the analyst can proceed to examine multiple changes in combination with one another.

## PERSONNEL EXPERIENCE AND STABILITY – ILLUSTRATING REAL WORLD ISSUES

The effective translation of high-level strategic objectives into actionable knowledge in the form of a prioritized node mission package list requires the availability and effective integration of relevant expertise. This expertise must span across the political, military, economic, social, information, and infrastructure dimensions of the battlespace and include the required capabilities for building each knowledge level of the JTF problem space. Several factors can serve to obstruct this process, including the lack of experience with the type of dimensions and elements relevant to the operational campaign and the lack of social acceptance or trust of those possessing the requisite experience.

As noted in a 1999 Special Report by the US Institute for Peace, there is a recognized need for training officers to deal with the specific problem set of peace operations. (Olsen & Davis, 1999) Specifically, this report—based on experience in Bosnia—noted that "'*Just-in-time training will*

*not always work unless there is the foundation upon which to build. According to General Meigs, the army faces a major challenge: 'The army has a wonderful ability to adapt to a crisis, but we have to be better than that and adapt to the environment before the crisis hits, because in the twenty-first century, the crisis may be so different that you will not be able to adapt quickly enough. Just having good soldiers isn't going to cut it.'"* This report concluded that "*Greater emphasis must be placed on geopolitical and cultural training for the army's officer corps.*" In short, it emphasized the need for expertise across each of the PMESII dimensions of the battlespace.

A similar theme was echoed six years later during Operation Iraqi Freedom. In a 2005 memorandum report for the Senate Foreign Relations Committee, General (retired) Barry McCaffrey identified a number of vulnerabilities in the Joint command system overseeing operations in Iraq. (McCaffrey, 2005) Specifically, he noted a continued under-manning and too rapid turnover of State Department inter-agency representation in Iraq. In addition, he cited the lack of continuity of strategic and operational leadership as being problematic. This theme was again repeated in his 2006 academic report to the US Military Academy where he cited the continued problem of marginally qualified and inadequately experienced personnel in the area of interagency planning and support. (McCaffrey, 2006)

Personnel rotation is thought to be another endemic issue in the effective functioning of a Joint command system. As noted in the Phase I report of this research project (Leedom, 2004), the learning curve for personnel assigned within a Joint Task Force headquarters is very steep. Once the skills and knowledge are acquired, however, two factors contribute to the challenge of maintaining them over time: personnel shortages and the lack of Joint training opportunities. Service personnel rotations in some headquarters can be as short as 90 days, thus creating an obstacle to effective social collaboration within and across functional areas in a headquarters planning staff. (Kelly & Andreasen, 2003)

Summarizing these various reports and articles, one concludes that an often overlooked aspect of JTF command system design is personnel experience in the relevant dimensions of the operational campaign and personnel stability which influences the formation of social networks and effective communities of interest. Accordingly, it was decided that this set of issues would provide an appropriate context for illustrating some of the model capabilities developed within *Project Gnosis*.

## PARAMETRIC EXAMINATION OF EXPERIENCE AND STABILITY ISSUES

In order to examine the impact of personnel inexperience and social network immaturity on the overall performance of the JTF command system, two sets of parametric runs were identified. In the first set of runs, the overall knowledge level of the senior JTF staff members was parametrically lowered from the values established in the baseline scenario. In a second set of runs, the social currency values of two key political and social knowledge players were varied during the stability and reconstruction phase of the scenario. In each case, the model was used to examine the impact of these types of changes on the quality of the Effects Tasking Order produced by the simulated JTF command system.

**Baseline Scenario and Model Input**

The baseline scenario and model input considered for these series of parametric model runs is based on a hypothetical four-phase military campaign (introduced earlier in this report and described in detail in Appendix A). Expression of this scenario in terms of an ideal world JTF problem space was developed using experienced operational judgment to establish the representative Strategic Endstates, Centers of Gravity, PMESII Functional Elements, and Node Mission Packages. Likewise, the ideal world linkage of these knowledge elements was based on experienced operational judgment. Given the unclassified nature of the model and database, no attempt was made to calibrate this data with current real-world operations. However, it is believed that the resulting hierarchical set of linked knowledge elements forming the framework of the database reflects face validity.

Similarly, the defined characteristics of the JTF staff actors simulated within the model were developed using experienced operational judgment (Appendix B). In general, staff actor definitions correspond to a notional Joint Task Force Headquarters design that has been supplemented with additional expertise from the subordinate component commands and other reach-back agencies. The particular areas and levels of PMESII knowledge assigned to each staff actor are considered representative of the nominal type of staff officer that might be assigned in such a position. However, within the current project, no attempt was made to empirically calibrate these knowledge estimates with specific individuals. Such an undertaking would be the focus of a separate effort, depending upon the focus and scope of the systems engineering issues being investigated. As with the scenario knowledge elements, it is believed that the baseline staff actor definitions reflect a level of face validity, based on experienced operational judgment.

All of this being said, the reader is cautioned against attaching too much significance to the absolute performance results achieved with each model run –i.e., interpret them as absolute point estimates of performance for some future JTF Command System. Rather, the reader is encouraged to focus attention on the relative comparisons of performance across related sets of model runs. As with most types of modeling efforts, the focus of these illustrations is the investigation of model sensitivity, not its ability to predict future point estimates of real-world performance.

**Reduction of Staff Experience Level**

In this first set of parametric model runs, the association strength values defined in each of the staff actor knowledge matrices were systematically reduced to 75 percent and 50 percent of their baseline scenario levels. As described earlier, the reduction of these values make it less likely that a staff actor would recognize valid linkages between the various knowledge elements in the JTF problem space, as defined by the ideal world structure reflected in the input scenario. As these staff actors participate in the different knowledge creation tasks, their failure to recognize specific linkages would have the effect of dropping key elements at each level of the knowledge element hierarchy. Thus, as more elements are dropped, the resulting Effects Tasking Order becomes less and less complete. The primary knowledge creation tasks affected by this parametric change include the following:

- Task 1-3 Identify specific Strategic Endstates that reflect each National Command Authority Objective (conducted by the staff actors participating in the Joint Coordination Board)

- Task 1-4 Identify specific Centers of Gravity that must be influenced to achieve each identified Strategic Endstate (conducted by the staff actors participating in the Core Joint Planning Group)
- Task 2-1 Identify the specific PMESII Functional Elements supporting each identified Center of Gravity (conducted by the staff actors participating in the Core Joint Planning Group)

Results of these model runs for each of the scenario phases are shown in Figures 32-35. Illustrated in each of the figures is the top portion of the JTF problem space, depicted in terms of the ideal world knowledge elements that comprise the scenario. These elements are arranged in hierarchical form from left to right, beginning with the National Command Authority Objectives as they are decomposed into the associated Strategic Endstates, Centers of Gravity, and PMESII Functional Elements. By following each chart from left to right, it is possible to trace the specific linkages and recognitions that would be expected to be recognized in an ideal world state. Also depicted in each figure are those Centers of Gravity and PMESII Functional Elements actually recognized by the simulated JTF staff actors across the different parametric cases. [*Note: A gray-shaded box indicates that a particular Center of Gravity or PMESII Functional Element was successfully recognized and included in the Effects Tasking Order, based on the staff actors' knowledge of those specific linkages.*]

A review of each of these figures illustrates the effect of systematically lowering staff actor knowledge –*i.e.*, the association strength values defined in each of the staff actor knowledge matrices were parametrically reduced to 75 percent and 50 percent of their baseline scenario levels. A corresponding reduction in the number of Centers of Gravity and PMESII Functional Elements for each case is also seen across the set of figures. Instances where additional elements are being picked up as staff actor knowledge decreases would appear on the surface to be a counterintuitive result. However, it must be remembered that the model logic allows the analyst to set a threshold limit for each knowledge creation task. When the number of knowledge elements recognized by the primary staff actors drops below this specified threshold for a given task, the model assumes that the task would be re-executed with the addition of supporting staff actors. In some instances, the addition of these supporting staff actors increases the ability of the JTF command system to recognize a greater number of knowledge elements.

Another way to compare these different cases is to compute the "operational score" reflected in the different Effects Tasking Orders –an arbitrarily scaled value used to compare parametric cases, but which has no literal meaning in the real-world. Here, the concept of "operational score" is computed by summing the assigned operational value of each set of recognized Centers of Gravity or PMESII Functional Elements –*i.e.*, a higher score indicates that the simulated set of staff actors were able to successfully identify a more significant fraction of the overall JTF problem space defined in the baseline scenario. At the level of Center of Gravity recognition, the staff actors in the baseline model recognized 90.7 percent of the operational value defined in the ideal world JTF problem space. When staff actor baseline knowledge in the Joint Coordination Board and Core Joint Planning Group was reduced to 75 percent of the baseline value, the simulated staff actors were able to recognize only 55.1 percent of the operational value defined in the ideal world JTF problem space –or 60.8 percent of the baseline performance. Similarly, when staff actor baseline knowledge in the Joint Coordination Board and Core Joint Planning Group was reduced to 50 percent of the baseline value, the simulated staff actors were able to

recognize 53.1 percent of the operational value defined in the ideal world JTF problem space –or 58.5 percent of the baseline performance. As seen from Figures 32-35, further reductions in staff actor knowledge are being partially offset by the model's logic that triggers the re-execution of certain knowledge creation tasks with secondary actors whenever the overall quality of the simulated knowledge product produced by the primary actors drops below a specified threshold.

| NCA Objectives | Strategic Endstates | Centers of Gravity | Base | 0.75 | 0.5 | PMESII Functional Elements | Base | 0.75 | 0.5 |
|---|---|---|---|---|---|---|---|---|---|
| Shape Battlespace | Air/Sea Superiority | Adversary Airpower Systems | | | | Fighter/Interceptors | | | |
| | | | | | | Military/Civilian Airfields | | | |
| | | | | | | Airfield Support Facilities | | | |
| | | | | | | EW Radar Networks | | | |
| | | | | | | GCI Radar Networks | | | |
| | | | | | | SAM Control Radars | | | |
| | | | | | | SAM Batteries | | | |
| | | Adversary Seapower Systems | | | | Naval Combatant Ships | | | |
| | | | | | | Submarines | | | |
| | | | | | | Littoral Patrol Boats | | | |
| | | | | | | Military Seaport Docks | | | |
| | | | | | | Seaport Support Facilities | | | |
| | | | | | | Paramilitary Sea Threat | | | |
| | | | | | | Sea Mine Clearance Areas | | | |
| | Persistent ISR | Key Areas of Interest | | | | Regime Leader Residence | | | |
| | | | | | | Political Party Facilities | | | |
| | | | | | | Political C2 Network | | | |
| | | | | | | Regime Financial Network | | | |
| | | | | | | WMD Delivery Systems | | | |
| | | | | | | WMD Stockpiles | | | |
| | | | | | | Red Military Installations | | | |
| | | | | | | Red Staging Areas | | | |
| | | | | | | Red Defensive Positions | | | |
| | | | | | | Red Approach Routes | | | |
| | | | | | | Paramilitary Stockpiles | | | |
| | | | | | | Paramilitary Units | | | |
| | | | | | | Paramilitary Vehicles | | | |
| | | | | | | Terrorist Training Camps | | | |
| | | | | | | Border Infiltration Routes | | | |
| | | | | | | Ethnic Populations | | | |
| | | | | | | Refugees/Resettlements | | | |
| | | | | | | Key Geographic Areas | | | |
| | | | | | | Regional Media Outlets | | | |
| | | | | | | Natural Resource Facilities | | | |
| | | | | | | Resource Infrastructure | | | |
| | | | | | | Technical Workers | | | |
| | Insurgency Alignment | Internal Insurgency Forces | | | | Regional Insurgency Cells | | | |
| | | | | | | Insurgency Leadership | | | |
| | Capitulation/Neutrality | Key Admin/Mil Officials | | | | Democratic Leadership | | | |
| | | | | | | Local Admin Leaders | | | |
| | | | | | | Key Utility Managers | | | |
| | | | | | | Military Leaders | | | |
| | Population Support | Civilian Population | | | | Religious Leaders | | | |
| | | | | | | Local Tribal Leaders | | | |
| | | | | | | Key Ethnic Populations | | | |
| | Initial Deployment | US/Coalition Forces | | | | Airmobile Assault Forces | | | |
| | | | | | | Amphib Assault Forces | | | |
| | | | | | | Deception Forces | | | |
| Regional Diplomacy | Host Nation Agreements | Country Green | | | | Green Minister of Defense | | | |
| | | | | | | Green Minister of Interior | | | |
| | | | | | | Green Military Cdrs | | | |
| | Neutrality Agreements | Country Orange | | | | Orange Minister of Defense | | | |
| | | | | | | Orange Minister of Interior | | | |
| | | | | | | Orange Military Cdrs | | | |

**Figure 32 Results of Parametrically Reducing Staff Actor Knowledge - Setting Initial Conditions**

| NCA Objectives | Strategic Endstates | Centers of Gravity | Base | 0.75 | 0.5 | PMESII Functional Elements | Base | 0.75 | 0.5 |
|---|---|---|---|---|---|---|---|---|---|
| Conduct Deception Campaign | Fix Adversary Forces | Eastern Surveillance | | | | Long Range Surveillance | | | |
| | | | | | | Tactical Reconnaissance | | | |
| | | Eastern Combat Divisions | | | | Assembly Areas / Def Positions | | | |
| | | Eastern Advance Routes | | | | Border Civilian Population | | | |
| Conduct Initial Forced Entry | Air/Sea Superiority | Adversary Airpower Systems | | | | Fighter/Interceptors | | | |
| | | | | | | Military/Civilian Airfields | | | |
| | | | | | | Airfield Support Facilities | | | |
| | | | | | | EW Radar Networks | | | |
| | | | | | | GCI Radar Networks | | | |
| | | | | | | SAM Control Radars | | | |
| | | | | | | SAM Batteries | | | |
| | | Adversary Seapower Systems | | | | Naval Combatant Ships | | | |
| | | | | | | Submarines | | | |
| | | | | | | Littoral Patrol Boats | | | |
| | | | | | | Military Seaport Docks | | | |
| | | | | | | Seaport Support Facilities | | | |
| | | | | | | Paramilitary Sea Threat | | | |
| | | | | | | Sea Mine Clearance Areas | | | |
| | Persistent ISR | Key Areas of Interest | | | | Red Military Installations | | | |
| | | | | | | Red Staging Areas | | | |
| | | | | | | Red Defensive Positions | | | |
| | | | | | | Red Approach Routes | | | |
| | | | | | | Paramilitary Stockpiles | | | |
| | | | | | | Paramilitary Units | | | |
| | | | | | | Paramilitary Vehicles | | | |
| | | | | | | Terrorist Training Camps | | | |
| | | | | | | Border Infiltration Routes | | | |
| | Eliminate WMD Threat | WMD Stockpiles / Delivery Sys | | | | WMD Delivery Systems | | | |
| | | | | | | WMD Stockpiles | | | |
| | Degrade Regime Leadership | Top Regime Leadership | | | | Regime Leader Residence | | | |
| | | | | | | Political Party Facilities | | | |
| | | | | | | Political C2 Network | | | |
| | | | | | | Regime Financial Network | | | |
| | Conduct Amphibious Assault | Western Border Defenses | | | | Physical Defenses | | | |
| | | Western Security Forces | | | | Conscript Military Units | | | |
| | | Western Paramilitary | | | | West Paramilitary Stockpiles | | | |
| | | | | | | West Paramilitary Units | | | |
| | | | | | | West Paramilitary Vehicles | | | |
| | Conduct Airmobile Assault | Key Airfield Defenses | | | | Elite Security Units | | | |
| | | Southern Paramilitary | | | | South Paramilitary Stockpiles | | | |
| | | | | | | South Paramilitary Units | | | |
| | | | | | | South Paramilitary Vehicles | | | |
| | Build Insurgency Axis | Capital Area Paramilitary | | | | Cap Paramilitary Stockpiles | | | |
| | | | | | | Cap Paramilitary Units | | | |
| | | | | | | Cap Paramilitary Vehicles | | | |
| Set Conditions for STRO | Key Leader Capitulation | Western/Southern Leaders | | | | Ministry/Parliament Leaders | | | |
| | | | | | | City/Town Mayors | | | |
| | | | | | | City/Town Utility Mgrs | | | |
| | | | | | | Military Commanders | | | |
| | Build Population Support | Cultural/Religious Support | | | | Key Religious Leaders | | | |
| | | | | | | Clan/Tribal Leaders | | | |
| | | Key Route Traffic | | | | Key Route Population | | | |
| | Build Humanitarian Base | Country Green Staging Areas | | | | Humanitarian Stockpiles | | | |
| | | | | | | Staging Areas | | | |
| | Protect National Resources | Resource Infrastructure | | | | Oil / Mine / Agri Facilities | | | |
| | | | | | | Pipelines / Transport Sys | | | |
| | | | | | | Technician / Worker Groups | | | |
| | | | | | | Paramilitary Units | | | |
| | | | | | | Paramilitary Vehicles | | | |
| | Protect Minority Population | Ethnic Neighborhoods | | | | Paramilitary Units | | | |
| | | | | | | Paramilitary Vehicles | | | |

Figure 33 Results of Parametrically Reducing Staff Actor Knowledge - Initial Forced Entry

| NCA Objectives | Strategic Endstates | Centers of Gravity | Base | 0.75 | 0.5 | PMESII Functional Elements | Base | 0.75 | 0.5 |
|---|---|---|---|---|---|---|---|---|---|
| Eliminate WMD Capability | WMD Under Positive Control | WMD Stockpiles / Delivery | | | | WMD TELs | | | |
| | | | | | | WMD Storage / Assembly | | | |
| | | WMD Labs / Production | | | | WMD Research Labs / Plants | | | |
| Eliminate Regime Power | Regime Leaders Neutralized | Key Regime Actors | | | | Key Regime Leaders | | | |
| | | | | | | Regime Residences / Bunkers | | | |
| | Regime Party Neutralized | Political/Finance Nets | | | | Political Party Facilities | | | |
| | | | | | | Regime Financial Networks | | | |
| | | Capital Area Paramilitary | | | | Paramilitary Cells | | | |
| Neutralize Combat Divisions | Divs Capitulate / Destroyed | Capitualting Divisions | | | | Division Leadership | | | |
| | | | | | | Division Equipment | | | |
| | | | | | | Division Troops | | | |
| | | | | | | Disrupting Paramil Units | | | |
| | | | | | | Disrupting Paramil Vehicles | | | |
| | | Resisting Divisions | | | | Division Leadership | | | |
| | | | | | | Division Equipment | | | |
| | | | | | | Division troops | | | |
| Secure Natural Resources | Protect National Resources | Resource Infrastructure | | | | Oil / Mine / Agri Facilities | | | |
| | | | | | | Pipelines / Transport Sys | | | |
| | | | | | | Technician / Worker Groups | | | |
| | | | | | | Paramilitary Units | | | |
| | | | | | | Paramilitary Vehicles | | | |
| Protect / Sustain Civilians | Keep Population in Homes | Key Population Leaders | | | | Cultural / Religious Ldrs | | | |
| | | | | | | Clan/Tribal Leaders | | | |
| | | Civilian Refuge Traffic | | | | Key Route Population | | | |
| | Humanitarian Relief | Distribution Relief Areas | | | | Relief Supplies | | | |
| | | | | | | Distribution Sites | | | |
| | | | | | | Paramilitary Units | | | |
| | | | | | | Paramilitary Vehicles | | | |
| | Protect Minority Population | Ethnic Neighborhoods | | | | Paramilitary Units | | | |
| | | | | | | Paramilitary Vehicles | | | |
| Establish Law and Order | Destroy Terrorist Base | Terrorist Operations | | | | Training Camps | | | |
| | | | | | | Terrorist Bunkers | | | |
| | | | | | | Terrorist Personnel | | | |
| | Stop Foreign Infiltrators | Foreign Infiltration Cells | | | | Terrorist Personnel | | | |
| | Apprehend Criminals | Criminal Networks | | | | Criminal Personnel | | | |
| Protect Coalition Logistics | Protect Convoys / Assby Areas | Coalition Supply Convoys | | | | Convoy Security | | | |
| | | | | | | Paramilitary Units | | | |
| | | | | | | Paramilitary Vehicles | | | |
| | | | | | | Terrorist Cells | | | |
| | | Coalition Assembly Areas | | | | Assembly Area Security | | | |
| | | | | | | Paramilitary Units | | | |
| | | | | | | Paramilitary Vehicles | | | |
| | | | | | | Terrorist Cells | | | |

**Figure 34 Results of Parametrically Reducing Staff Actor Knowledge - Decisive Operations**

| NCA Objectives | Strategic Endstates | Centers of Gravity | Base | 0.75 | 0.5 | PMESII Functional Elements | Base | 0.75 | 0.5 |
|---|---|---|---|---|---|---|---|---|---|
| Defeat Violent Spoilers | Isolate / Defeat Spoilers | Neighborhood Intelligence | | | | Ethnic Leader Cooperation | | | |
| | | | | | | Media Outlets | | | |
| | | Operating Spoiler cells | | | | Terrorist Leadership | | | |
| | | | | | | Terrorist Cells | | | |
| | | | | | | Terrorist Weapons Cache | | | |
| | | | | | | Terrorist Support Networks | | | |
| | | Insurgency Attack Sites | | | | IED Consequence Mgmt | | | |
| | | | | | | Civil Population Support | | | |
| | | | | | | Media Outlets | | | |
| Co-opt Nonviolent Spoilers | Restrain Disruption Agents | Ethnic Communication | | | | Community Leader Dialog | | | |
| | | | | | | Media Outlets | | | |
| | | Spoiler Organizations | | | | Spoiler Org Leadership | | | |
| | | | | | | Spoiler Org Agents | | | |
| | | | | | | Spoiler Org Followers | | | |
| | | | | | | Media Outlets | | | |
| | | Major Disruption Sites | | | | Protest Consequence Mgmt | | | |
| | | | | | | Civil Population Support | | | |
| | | | | | | Media Outlets | | | |
| Estab Next State Conditions | Civil Law and Order | Civil Administration | | | | Civil Admin Functions | | | |
| | | | | | | National/Local Elections | | | |
| | | | | | | Media Outlets | | | |
| | | | | | | Admin Office Security | | | |
| | | National Police Force | | | | Recruit Police Personnel | | | |
| | | | | | | Police Training Program | | | |
| | | | | | | Media Outlets | | | |
| | Public Infrastructure | Electricity / Water / Sewage | | | | Electric Power Networks | | | |
| | | | | | | Water / Sewage Treatment | | | |
| | | | | | | Media Outlets | | | |
| | | | | | | Utility Systems Security | | | |
| | | Information Networks | | | | Telephone / Internet Grid | | | |
| | | | | | | Broadcast Media Centers | | | |
| | | | | | | Media Outlets | | | |
| | | | | | | Communications Security | | | |
| | | Public Education | | | | Local School Facilities | | | |
| | | | | | | Media Outlets | | | |
| | | Transportation Networks | | | | Key Bridges | | | |
| | | | | | | Key Roadways | | | |
| | | | | | | Key Rail Lines | | | |
| | | | | | | Media Outlets | | | |
| | | | | | | Transport System Security | | | |
| | Public Health Services | Public Health Systems | | | | Hospitals / Clinics | | | |
| | | | | | | Medical Stockpiles | | | |
| | | | | | | Media Outlets | | | |
| | Internal Security Forces | National Military Forces | | | | Key Military Leadership | | | |
| | | | | | | NCO / Enlisted Personnel | | | |
| | | | | | | Military Training Program | | | |
| | | | | | | Military Equipment | | | |
| | | | | | | Media Outlets | | | |
| International Support | Economic Development Aid | Key Economic Sectors | | | | Economic Aid Agreements | | | |
| | | | | | | Econ Development Projects | | | |
| | | | | | | Contractor Protection | | | |
| | | | | | | Media Outlets | | | |
| | PVO/NGO Synchoronization | PVO/NGO Organizations | | | | PVO/NGO Projects | | | |
| | | | | | | PVO/NGO Protection | | | |
| | | | | | | Media Outlets | | | |

Figure 35 Results of Parametrically Reducing Staff Actor Knowledge - Stability and Reconstruction

In summary, the model results provide insight into the type of performance degradation that might be expected when the operational planning is conducted by a less experienced senior staff.

The fact that the resulting reduction in recognized knowledge elements was not proportional to the parametric reductions in actor association strengths is a reflection of the model's inherent complexity. That is, the model logic allows a secondary set of supporting actors to re-execute the critical knowledge creation tasks when the initial results fall below a specified threshold. The unequal distribution of expertise across the set of actors regarding each area of the scenario (see Appendix B) adds further complexity to this process, producing the specific results seen in Figures 32-35.

**Reduction of Staff Actor Social Currency**

In the second series of parametric runs, adjustments were made to the knowledge matrices of the various staff actors so as to give the Political-Military (POLMIL) Planner and Stability Operations (STO) Planner uniquely high knowledge of those knowledge elements considered political or social in nature. That is, the POLMIL Planner's knowledge of political elements was set to a very high association value, while all other staff actors were correspondingly set to very low association values. The one exception made in this case definition was with respect to the "*Ambassador*" staff actor who was given high knowledge of the "*PVO/NGO Synchronization*" Strategic Endstate. Similarly, The STO Planner's knowledge of social elements was set to a very high association value, while all other staff actors were correspondingly set to very low association values. Then, a series of runs were executed wherein the POLMIL Planner and STO Planner's social currency factor was parametrically varied over the values of 1.0, 0.7 and 0.3. In effect, the lowering of each actor's social currency value would reduce the likelihood that they would be allowed to effectively participate in specific planning tasks. The primary knowledge creation tasks affected by this parametric change include the following:

- Task 1-3 Identify specific Strategic Endstates that reflect each National Command Authority Objective (conducted by the Joint Coordination Board which includes the POLMIL Planner as a supporting member, but does not include the STO Planner)
- Task 1-4 Identify specific Centers of Gravity that must be influenced to achieve each identified Strategic Endstate (conducted by the Core Joint Planning Group, which includes the POLMIL Planner as a primary member and the STO Planner as a supporting member)
- Task 2-1 Identify the specific PMESII Functional Elements supporting each identified Center of Gravity (conducted by the Core Joint Planning Group, which includes the POLMIL Planner as a primary member and the STO Planner as a supporting member)
- Task 3-1 Identify the specific Node Mission Packages that are targeting against each identified PMESII Functional Element (conducted by the Joint Fires and Effects Working Group, which includes the POLMIL Planner as a primary member, but does not include the STO Planner)

Results of these model runs are illustrated in Figure 36, where again the gray-shaded boxes indicate which knowledge elements were recognized as part of the Effects Tasking Order by the simulated set of staff actors. The base case represents the situation where the social currency of the POLMIL Planner and STO Planner was set to 1.0. The next two columns for each level of knowledge element represent the situation where the social currency of the POLMIL Planner and STO Planner was set to 0.7 and 0.3, respectively. For this set of model runs, the analysis looked

only at Phase IV, Stability and Reconstruction, since this was the operational phase where political and social knowledge elements existed in significant numbers.

Examination of these comparative results illustrates the complex nature of the simulation model developed in this project. If one were to simply compare these cases on the basis of total operational value reflected in the overall Node Mission Package list, the reduction of POLMIL Planner and STO Planner social currency from 1.0 down to 0.7 and 0.3 would see only a 2.1 percent and 5.6 percent drop in operational value, respectively.[9] Such a comparison yields little insight into the truly significant impact of varying this type of collaboration factor for two key staff actors. Rather, one must examine the specific changes brought about in the Effects Tasking Order by this type of factor.

For example, the entire block of knowledge elements falling under the "*Restrain Disruptive Agents*" Strategic Endstate remained unrecognized because neither the POLMIL Planner nor the STO Planner were primary members of the Joint Coordination Board that is responsible for identifying Strategic Endstates. Because all of the other staff actors participating in this task were given low knowledge of this Strategic Endstate, this entire branch of the JTF problem space remained unrecognized. As part of the model input, the POLMIL Planner and STO Planner were given uniquely high knowledge of many of the Centers of Gravity, PMESII Functional Elements, and Node Mission Packages that fall within this branch of the problem space. However, because of the Joint Coordination Board's failure to recognize the "*Restrain Disruptive Agents*" Strategic Endstate, the POLMIL Planner and STO Planner were not given the opportunity to expand this part of the JTF problem space.

The effect of reducing the social currency of the POLMIL Planner can be specifically seen with regard to the "*PVO/NGO Projects*" PMESII Functional Element and the corresponding "*Project Coordination*" Node Mission Package. As the social currency of this staff actor was lowered to 0.7 and beyond, the actor no longer participated in either the Core Joint Planning Group or the Joint Fires and Effects Working Group. Since other staff actors participating in these knowledge creation tasks did not have high knowledge of these elements, they remained unrecognized in the Effects Tasking Order.

[9] The ideal world operational value reflected in the set of Node Mission Packages identified for Phase IV of the operational campaign is 1005.86 –a somewhat arbitrarily scaled value that is based on the operational scores assigned to each knowledge element within the JTF problem space, and a number that has meaning only with respect to the baseline reference value. Giving the POLMIL Planner and STO Planner uniquely high political and social knowledge, respectively, yields a recognized operational value score of 817.11 when their social currency is set to a value of 1.0. Lowering this value to 0.7 and 0.3 produces a recognized operational value score of 800.31 and 770.31, respectively. These numbers, in themselves, do not provide much insight into the focused impact of removing these two staff actors from the Effects Tasking Order creation process. Greater insight is achieved by examining the specific areas in which the staff fails to recognize key elements of the JTF problem space.

| NCA Objectives | Strategic Endstates | Base | 70% | 30% | Centers of Gravity | Base | 70% | 30% | PMESII Functional Elements | Base | 70% | 30% | Node Mission Packages | Base | 70% | 30% |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Defeat Violent Spoilers | Isolate / Defeat Spoilers | | | | Neighborhood Intelligence | | | | Ethnic Leader Cooperation | | | | Local Community Leader | | | |
| | | | | | | | | | Media Outlets | | | | TV/Radio/Newspaper Office | | | |
| | | | | | Operating Spoiler Cells | | | | Terrorist Leadership | | | | Terrorist Cell Leader | | | |
| | | | | | | | | | Terrorist Cells | | | | Terrorist Cell | | | |
| | | | | | | | | | Terrorist Weapons Cache | | | | Weapons Cache | | | |
| | | | | | | | | | Terrorist Support Networks | | | | Support Network | | | |
| | | | | | Insurgency Attack Sites | | | | IED Consequence Mgmt | | | | Medical Injury Site | | | |
| | | | | | | | | | | | | | Facility Damage Site | | | |
| | | | | | | | | | Civil Population Support | | | | Local Neighborhood | | | |
| | | | | | | | | | Media Outlets | | | | TV/Radio/Newspaper Office | | | |
| Co-opt Nonviolent Spoilers | Restrain Disruption Agents | | | | Ethnic Communication | | | | Community Leader Dialog | | | | Local Community Leader | | | |
| | | | | | | | | | Media Outlets | | | | TV/Radio/Newspaper Office | | | |
| | | | | | Spoiler Organizations | | | | Spoiler Org Leadership | | | | Spoiler Org Leader | | | |
| | | | | | | | | | Spoiler Org Agents | | | | Local Spoiler Org Cell | | | |
| | | | | | | | | | Spoiler Org Followers | | | | Local Neighborhood Areas | | | |
| | | | | | | | | | Media Outlets | | | | TV/Radio/Newspaper Office | | | |
| | | | | | Major Disruption Sites | | | | Protest Consequence Mgmt | | | | Medical Injury Site | | | |
| | | | | | | | | | | | | | Facility Damage Site | | | |
| | | | | | | | | | Civil Population Support | | | | Local Neighborhood | | | |
| | | | | | | | | | Media Outlets | | | | TV/Radio/Newspaper Office | | | |
| Estab Next State Conditions | Civil Law and Order | | | | Civil Administration | | | | Civil Admin Functions | | | | Local Admin Office | | | |
| | | | | | | | | | | | | | Admin Official Vetting | | | |
| | | | | | | | | | National/Local Elections | | | | Election Event | | | |
| | | | | | | | | | Media Outlets | | | | TV/Radio/Newspaper Office | | | |
| | | | | | | | | | Admin Office Security | | | | Area Security Site | | | |
| | | | | | National Police Force | | | | Recruit Police Personnel | | | | Recruitment Program | | | |
| | | | | | | | | | Police Training Program | | | | Police Training Facility | | | |
| | | | | | | | | | | | | | Training Program Delivery | | | |
| | | | | | | | | | Media Outlets | | | | TV/Radio/Newspaper Office | | | |
| | Public Infrastructure | | | | Electricity / Water / Sewage | | | | Electric Power Networks | | | | Electric Power Facility | | | |
| | | | | | | | | | Water / Sewage Treatment | | | | Water / Sewer Facility | | | |
| | | | | | | | | | Media Outlets | | | | TV/Radio/Newspaper Office | | | |
| | | | | | | | | | Utility Systems Security | | | | Area Security Site | | | |
| | | | | | Information Networks | | | | Telephone / Internet Grid | | | | Communications Facility | | | |
| | | | | | | | | | Broadcast Media Centers | | | | Media Center Facility | | | |
| | | | | | | | | | Media Outlets | | | | TV/Radio/Newspaper Office | | | |
| | | | | | | | | | Communications Security | | | | Area Security Site | | | |
| | | | | | Public Education | | | | Local School Facilities | | | | School Building | | | |
| | | | | | | | | | Media Outlets | | | | TV/Radio/Newspaper Office | | | |
| | | | | | Transportation Networks | | | | Key Bridges | | | | Bridge | | | |
| | | | | | | | | | Key Roadways | | | | Roadway | | | |
| | | | | | | | | | Key Rail Lines | | | | Rail Line | | | |
| | | | | | | | | | Media Outlets | | | | TV/Radio/Newspaper Office | | | |
| | | | | | | | | | Transport System Security | | | | Area Security Site | | | |
| | Public Health Services | | | | Public Health Systems | | | | Hospitals / Clinics | | | | Hospital or Clinic | | | |
| | | | | | | | | | Medical Stockpiles | | | | Medical Supply Load | | | |
| | | | | | | | | | Media Outlets | | | | TV/Radio/Newspaper Office | | | |
| | Internal Security Forces | | | | National Military Forces | | | | Key Military Leadership | | | | Military Officer Vetting | | | |
| | | | | | | | | | NCO / Enlisted Personnel | | | | NCO / Enlisted Vetting | | | |
| | | | | | | | | | Military Training Program | | | | Military Training Facility | | | |
| | | | | | | | | | | | | | Training Program Delivery | | | |
| | | | | | | | | | Military Equipment | | | | Combat Vehicle Group | | | |
| | | | | | | | | | | | | | Soldier Equipment Group | | | |
| | | | | | | | | | Media Outlets | | | | TV/Radio/Newspaper Office | | | |
| International Support | Economic Development Aid | | | | Key Economic Sectors | | | | Economic Aid Agreements | | | | Aid / Monetary Agreement | | | |
| | | | | | | | | | Econ Development Projects | | | | Project Coordination | | | |
| | | | | | | | | | Contractor Protection | | | | Area Security Site | | | |
| | | | | | | | | | Media Outlets | | | | TV/Radio/Newspaper Office | | | |
| | PVO/NGO Synchoronization | | | | PVO/NGO Organizations | | | | PVO/NGO Projects | | | | Project Coordination | | | |
| | | | | | | | | | PVO/NGO Protection | | | | Area Security Site | | | |
| | | | | | | | | | Media Outlets | | | | TV/Radio/Newspaper Office | | | |

**Figure 36 Results of Parametrically Reducing Social Currency of POLMIL Planner and STO Planner**

Similarly, as the social currency of the STO Planner was lowered to 0.3, this staff actor no longer contributed to the Core Joint Planning Group –thus resulting in the "*Civil Population Support*" PMESII Functional Element remaining unrecognized with respect to the "*Insurgency Attack Sites*" Center of Gravity. Because the STO Planner is not a member of the Joint Fires and Effects Working Group, this group was unable to recognize the "*Local Neighborhood*" Node Mission Package associated with the "*Civil Population Support*" PMESII Functional Element for any of the three model runs.

In summary, the second set of model runs illustrate one possible way in which personnel instability of two key staff actors might effect specific parts of the Effects Tasking Order. Unlike the first series of model runs, the effects of changing the social currency of the POLMIL Planner and STO Planner are not widespread across the JTF problem space. That is, they are more isolated and focus along a specific dimension of the operation –*e.g.*, dealing with (1) the effect of insurgency attacks and non-violent spoiler activities on the local civilian population and (2) the coordination of Private Voluntary Organization (PVO) and Non-Government Organization (NGO) activities with military operations. Yet, as demonstrated in recent real-world operations, the failure of a Joint or Coalition command system to effectively deal with these aspects of an operational campaign can prove significant over the long run. Hence, it is important that the subtle effects of personnel instability be thoroughly studied.

## SUMMARY

The goal of *Project Gnosis* was the initial proof-of-principle development of a new generation of simulation models that would be capable of analytically addressing multiple facets of the sensemaking and knowledge management process that occurs within a military command and control system. To that end, the present model allows the analyst to examine the impact of various cognitive, social and—to a limited extent—ecological variables on the ability of a JTF command process to produce and execute an Effects Tasking Order. As with a real-world military command and control system operating in a modern PMESII problem space, the simulated planning and execution process reflects the complex interaction of thousands of constructs and processes. Although the underlying logic of the model architecture is relatively straightforward and transparent, our limited experience with this type of simulation model in the present project has revealed its use to be challenging. Various sets of cognitive and social variables and constructs embedded within the model can interact in sometimes surprising ways to either enhance or degrade knowledge creation performance. Yet this is merely a reflection of the same complexity faced by analysts in studying real-world phenomena. Accordingly, great care must be taken in both defining the types of systems engineering issues to be addressed and the manner in which these issues are reflected in the myriad of data input required for each model run.

In this regard, this final section of the report has suggested a number of "analytic avenues" along which the analyst can use the model to address certain types of systems engineering issues. Yet this guidance must be supplemented with the analyst's experience in running the model – experience that reveals critical model sensitivities and limitations. Thus, caution must be raised against the notion that the model can be employed by the casual user to generate a quick or simple set of parametric analyses. Like with any complex simulation model, the use of this

model requires a committed set of analysts who can dedicate the time and attention needed to become intimately familiar with the model's workings.

The two series of parametric runs illustrated in this final section of the report are but a small sampling of the studies that could be undertaken with the model, depending upon the interests of the analyst. Like any complex simulation model, the present model is an analytic tool, not an answer to a specific systems engineering question. Consequently, the validity and quality of the insight achieved with the use of this model depends entirely upon the skill of the analyst to (1) develop valid input parameters from real-world observations and experience, (2) calibrate these input parameters with the analytic assumptions and algorithms embedded within the software, (3) form the input parameters into a cohesive "case representation" that is consistent with the model architecture, and (4) properly interpret the model output to reflect the type of insight appropriate for addressing a specific systems engineering issue.

Finally, it is acknowledged that the present model is by no means a complete representation of the process by which actionable knowledge is produced by an organization in the real world. Much research remains for the future to explore and refine other aspects of sensemaking and knowledge management. *Project Gnosis* is the beginning of but a very long journey to address the cognitive, social, and ecological dimensions of this process in a systematic and analytic manner. It has, however, demonstrated the feasibility and utility of such an undertaking. To that end, the present research study serves as both a milestone for the present and a direction sign for the future.

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# APPENDIX A SCENARIO DESCRIPTION

SETTING CONDITIONS FOR SUCCESS (PART 1 OF 2)

| NCA Index | NCA Objective | SES Index | SES Value | Strategic Endstate | CoG Index | CoG Value | Center of Gravity | FE Index | PMESII Functional Element | Effect Class | Operational Effect | NMP Class Index | % Contrib | Individual NMP Index | Node Mission Package |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Shape Battlespace | 1 | 80 | Air/Sea Superiority | 1 | 20 | Adversary Airpower Systems | 1 | Fighter/Interceptors | 1 | Destruction | 1 | 100% | 1-15 | Fighter Aircraft Squadron |
| | | | | | | | | 2 | Military/Civilian Airfields | 2 | Neutralized | 2 | 70% | 16-21 | Military Airfield Runway |
| | | | | | | | | | | | | 3 | 30% | 22-30 | Civilian Airfield Runway |
| | | | | | | | | 3 | Airfield Support Facilities | 1 | Destruction | 4 | 100% | 31-45 | Fuel Storage Facility |
| | | | | | | | | 4 | EW Radar Networks | 1 | Destruction | 5 | 100% | 46-48 | EW Radar Complex |
| | | | | | | | | 5 | GCI Radar Networks | 1 | Destruction | 6 | 100% | 49 | SAM Control Center |
| | | | | | | | | 6 | SAM Control Radars | 1 | Destruction | 7 | 100% | 50-52 | SAM Control Radar Site |
| | | | | | | | | 7 | SAM Batteries | 1 | Destruction | 8 | 100% | 53-61 | SAM Launcher Battery |
| | | | | | 2 | 15 | Adversary Seapower Systems | 8 | Naval Combatant Ships | 1 | Destruction | 9 | 100% | 62-64 | Naval Ship Group |
| | | | | | | | | 9 | Submarines | 1 | Destruction | 10 | 100% | 65-69 | Submarine |
| | | | | | | | | 10 | Littoral Patrol Boats | 1 | Destruction | 11 | 100% | 70-75 | Patrol Boat Group |
| | | | | | | | | 11 | Military Seaport Docks | 2 | Neutralized | 12 | 100% | 76-80 | Military Dock Complex |
| | | | | | | | | 12 | Seaport Support Facilities | 2 | Neutralized | 13 | 100% | 81-85 | Sea Support Facility |
| | | | | | | | | 13 | Paramilitary Sea Threat | 1 | Destruction | 14 | 100% | 86-90 | Paramilitary Boat Group |
| | | | | | | | | 14 | Sea Mine Clearance Areas | 1 | Destruction | 15 | 100% | 91-95 | Sea Mine Area |
| | | 2 | 70 | Persistent ISR | 3 | 15 | Key Areas of Interest | 15 | Regime Leader Residence | 8 | Monitor | 16 | 100% | 96-103 | Regime Residence/Bunker |
| | | | | | | | | 16 | Political Party Facilities | 8 | Monitor | 17 | 80% | 104 | Political Party Hqtrs |
| | | | | | | | | | | | | 18 | 20% | 105-114 | Local Party Office |
| | | | | | | | | 17 | Political C2 Network | 8 | Monitor | 19 | 70% | 115 | Political C2 Node |
| | | | | | | | | | | | | 20 | 30% | 116 | Alternate Pol C2 Node |
| | | | | | | | | 18 | Regime Financial Network | 8 | Monitor | 21 | 100% | 117 | National Financial Net |
| | | | | | | | | 19 | WMD Delivery Systems | 8 | Monitor | 22 | 100% | 118-122 | WMD TEL Battery |
| | | | | | | | | 20 | WMD Stockpiles | 8 | Monitor | 23 | 100% | 123-127 | WMD Storage Facility |
| | | | | | | | | 21 | Red Military Installations | 8 | Monitor | 24 | 100% | 128-147 | Military Garrison |
| | | | | | | | | 22 | Red Staging Areas | 8 | Monitor | 25 | 100% | 148-149 | Military Staging Area |
| | | | | | | | | 23 | Red Defensive Positions | 8 | Monitor | 26 | 100% | 150-175 | Defensive Fortification |
| | | | | | | | | 24 | Red Approach Routes | 8 | Monitor | 27 | 100% | 176-177 | Key LOC Route |
| | | | | | | | | 25 | Paramilitary Stockpiles | 8 | Monitor | 28 | 100% | 178-353 | Weapons Cache |
| | | | | | | | | 26 | Paramilitary Units | 8 | Monitor | 29 | 100% | 354-355 | Paramilitary Cell |
| | | | | | | | | 27 | Paramilitary Vehicles | 8 | Monitor | 30 | 100% | 356-357 | Paramilitary Vehicle Group |
| | | | | | | | | 28 | Terrorist Training Camps | 8 | Monitor | 31 | 100% | 358-361 | Training Camp Area |
| | | | | | | | | 29 | Border Infiltration Routes | 8 | Monitor | 32 | 100% | 362-384 | Infiltration Route |
| | | | | | | | | 30 | Ethnic Populations | 8 | Monitor | 33 | 100% | 385-402 | Ethnic Neighborhood |
| | | | | | | | | 31 | Refugees/Resettlements | 8 | Monitor | 34 | 100% | 403-411 | Refugee Camp |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | 32 | Key Geographic Areas | 8 | Monitor | 35 | 100% | 412-416 | Key Urban Area |
| | | | | | | | | 33 | Regional Media Outlets | 8 | Monitor | 36 | 100% | 417-418 | TV/Radio/Newspaper Media |
| | | | | | | | | 34 | Natural Resource Facilities | 8 | Monitor | 37 | 60% | 419-420 | Oilfield/Processing Complex |
| | | | | | | | | | | | | 38 | 40% | 421 | Key Agriculture Area |
| | | | | | | | | 35 | Resource Infrastructure | 8 | Monitor | 39 | 100% | 422-431 | Oil/Gas Pipeline |
| | | | | | | | | 36 | Technical Workers | 8 | Monitor | 40 | 100% | 432-435 | Key Worker Group |
| | | 3 | 75 | Insurgency Alignment | 4 | 15 | Internal Insurgency Forces | 37 | Regional Insurgency Cells | 9 | Establish Contact | 41 | 100% | 436-439 | Insurgency Cell |
| | | | | | | | | 38 | Insurgency Leadership | 9 | Establish Contact | 42 | 100% | 440-441 | Key Insurgency Leader |
| | | 4 | 80 | Capitulation/Neutrality | 5 | 10 | Key Admin/Mil Officials | 39 | Democratic Leadership | 9 | Establish Contact | 43 | 100% | 442-445 | Key Parliament Official |
| | | | | | | | | 40 | Local Admin Leaders | 9 | Establish Contact | 44 | 100% | 446-449 | City/Town Mayor |
| | | | | | | | | 41 | Key Utility Managers | 9 | Establish Contact | 45 | 100% | 450-456 | City Utility Manager |
| | | | | | | | | 42 | Military Leaders | 9 | Establish Contact | 46 | 100% | 457 | Military Commander |
| | | 5 | 70 | Population Support | 6 | 10 | Civilian Population | 43 | Religious Leaders | 9 | Establish Contact | 47 | 100% | 458 | Key Cleric Official |
| | | | | | | | | 44 | Local Tribal Leaders | 9 | Establish Contact | 48 | 100% | 459-460 | Key Tribal Warlord |
| | | | | | | | | 45 | Key Ethnic Populations | 13 | Warning | 49 | 100% | 461 | Key Ethnic Region |
| | | 6 | 80 | Initial Deployment | 7 | 20 | US/Coalition Forces | 46 | Airmobile Assault Forces | 15 | Deploy | 50 | 100% | 462-465 | Blue Airmobile Unit |
| | | | | | | | | 47 | Amphib Assault Forces | 15 | Deploy | 51 | 100% | 466-473 | Blue Marine Unit |
| | | | | | | | | 48 | Deception Forces | 15 | Deploy | 52 | 100% | 474-475 | Blue Ground Unit |
| 2 | Regional Diplomacy | 7 | 75 | Host Nation Agreements | 8 | 15 | Country Green | 49 | Green Minister of Defense | 10 | Sign Agreement | 53 | 100% | 476 | Overflight Agreement |
| | | | | | | | | 50 | Green Minister of Interior | 10 | Sign Agreement | 54 | 50% | 477-481 | Transit Agreement |
| | | | | | | | | | | | | 55 | 50% | 482-484 | Staging Area Agreement |
| | | | | | | | | 51 | Green Military Cdrs | 10 | Sign Agreement | 56 | 100% | 485 | Forces Agreement |
| | | 8 | 80 | Neutrality Agreements | 9 | 15 | Country Orange | 52 | Orange Minister of Defense | 10 | Sign Agreement | 57 | 100% | 486 | Pol Neutrality Agreement |
| | | | | | | | | 53 | Orange Minister of Interior | 10 | Sign Agreement | 58 | 100% | 487 | Anti-Sanctuary Agreement |
| | | | | | | | | 54 | Orange Military Cdrs | 10 | Sign Agreement | 59 | 100% | 488 | Mil Neutrality Agreement |

## SETTING CONDITIONS FOR SUCCESS (PART 2 OF 2)

| Node Mission Package | # of NMPs | NMP Rate | Prob of Intel Update | Action Class | Primary Action Class | Sorties /NMP | Prob Success | Prob Feedback | Action Class | Secondary Action Class | Sorties /NMP | Prob Success | Prob Feedback | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fighter Aircraft Squadron | 15 | – | 0.95 | 7 | Fixed Wing Air Interdiction | 6 | 0.85 | 0.95 | 4 | Air Cruise Missile | 24 | 0.95 | 0.95 | *24 aircraft per squadron* |
| Military Airfield Runway | 6 | – | 0.99 | 7 | Fixed Wing Air Interdiction | 2 | 0.95 | 0.95 | | | | | | *2 runways per airfield* |
| Civilian Airfield Runway | 9 | – | 0.99 | 7 | Fixed Wing Air Interdiction | 2 | 0.95 | 0.95 | | | | | | *2 runways per airfield* |
| Fuel Storage Facility | 15 | – | 0.99 | 7 | Fixed Wing Air Interdiction | 2 | 0.95 | 0.95 | 4 | Air Cruise Missile | 2 | 0.95 | 0.95 | *Fuel storage area plus vehicles* |
| EW Radar Complex | 3 | – | 0.95 | 7 | Fixed Wing Air Interdiction | 6 | 0.95 | 0.95 | 4 | Air Cruise Missile | 6 | 0.95 | 0.95 | *1 ground station plus 5 radar sites* |
| SAM Control Center | 1 | – | 0.95 | 7 | Fixed Wing Air Interdiction | 1 | 0.95 | 0.95 | 4 | Air Cruise Missile | 1 | 0.95 | 0.95 | *Regional SAM control center* |
| SAM Control Radar Site | 3 | – | 0.85 | 7 | Fixed Wing Air Interdiction | 6 | 0.95 | 0.95 | | | | | | *1 fixed center plus 5 mobile control radar sites* |
| SAM Launcher Battery | 9 | – | 0.85 | 7 | Fixed Wing Air Interdiction | 5 | 0.95 | 0.95 | | | | | | *10 launchers per battery* |
| Naval Ship Group | 3 | – | 0.95 | 7 | Fixed Wing Air Interdiction | 4 | 0.75 | 0.95 | 5 | Naval Surface Engagement | 4 | 0.9 | 0.95 | *4 surface combatant ships per group* |
| Submarine | 5 | – | 0.65 | 5 | Naval Surface Engagement | 1 | 0.50 | 0.75 | | | | | | *Single submarine* |
| Patrol Boat Group | 6 | – | 0.85 | 5 | Naval Surface Engagement | 2 | 0.75 | 0.95 | 7 | Fixed Wing Air Interdiction | 2 | 0.65 | 0.95 | *4 light patrol boats per group located in two areas* |
| Military Dock Complex | 5 | – | 0.99 | 5 | Naval Surface Engagement | 2 | 0.85 | 0.95 | 7 | Fixed Wing Air Interdiction | 4 | 0.95 | 0.95 | *Military dock complex* |
| Sea Support Facility | 5 | – | 0.99 | 5 | Naval Surface Engagement | 2 | 0.85 | 0.95 | 7 | Fixed Wing Air Interdiction | 4 | 0.95 | 0.95 | *Sea support facility* |
| Paramilitary Boat Group | 5 | – | 0.85 | 5 | Naval Surface Engagement | 4 | 0.75 | 0.95 | 7 | Fixed Wing Air Interdiction | 8 | 0.65 | 0.95 | *20 paramilitary vessels per group* |
| Sea Mine Area | 5 | – | 0.85 | 5 | Naval Surface Engagement | 2 | 0.85 | 0.95 | 7 | Fixed Wing Air Interdiction | 2 | 0.45 | 0.95 | *Mined sea lane or harbor area* |
| Regime Residence/Bunker | 8 | – | 0.95 | 14 | SOF Mission | 12 | 0.75 | 0.99 | 15 | Air Recon/Surveillance | 6 | 0.85 | 0.95 | *1 bunker plus 5 residences per mission package (not colocated)* |
| Political Party Hqtrs | 1 | – | 0.95 | 14 | SOF Mission | 1 | 0.75 | 0.99 | 15 | Air Recon/Surveillance | 1 | 0.65 | 0.95 | *Political party headquarters controlled by regime* |
| Local Party Office | 10 | – | 0.85 | 14 | SOF Mission | 1 | 0.85 | 0.99 | 15 | Air Recon/Surveillance | 1 | 0.65 | 0.95 | *Local political party office controlled by regime* |
| Political C2 Node | 1 | – | 0.95 | 15 | Air Recon/Surveillance | 1 | 0.75 | 0.95 | 14 | SOF Mission | 1 | 0.65 | 0.99 | *Political commo site controlled by regime (primary)* |
| Alternate Pol C2 Node | 1 | – | 0.95 | 15 | Air Recon/Surveillance | 1 | 0.75 | 0.95 | 14 | SOF Mission | 1 | 0.65 | 0.99 | *Political commo site controlled by regime (alternate)* |
| National Financial Net | 1 | – | 0.85 | 21 | Legal Proceedings | 1 | 0.65 | 0.99 | | | | | | *Financial network used to fund paramilitary forces* |
| WMD TEL Battery | 5 | – | 0.65 | 15 | Air Recon/Surveillance | 1 | 0.65 | 0.95 | 14 | SOF Mission | 1 | 0.55 | 0.99 | *22 launchers per battery located in a single region* |
| WMD Storage Facility | 5 | – | 0.65 | 15 | Air Recon/Surveillance | 1 | 0.35 | 0.95 | 14 | SOF Mission | 1 | 0.55 | 0.99 | *Concealed WMD storage facility* |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Military Garrison | 20 | – | 0.99 | 15 | Air Recon/Surveillance | 1 | 0.95 | 0.95 | 14 | SOF Mission | 1 | 0.85 | 0.99 | *Garrison facility plus 2,600 military personnel* |
| Military Staging Area | 2 | – | 0.85 | 15 | Air Recon/Surveillance | 1 | 0.95 | 0.95 | 14 | SOF Mission | 1 | 0.85 | 0.99 | *Military staging area* |
| Defensive Fortification | 26 | – | 0.85 | 15 | Air Recon/Surveillance | 1 | 0.95 | 0.95 | 14 | SOF Mission | 1 | 0.85 | 0.99 | *Defensive fortification located within avenue of approach* |
| Key LOC Route | 2 | – | 0.99 | 15 | Air Recon/Surveillance | 1 | 0.85 | 0.95 | 14 | SOF Mission | 1 | 0.85 | 0.99 | *Key intersection or route* |
| Weapons Cache | 176 | – | 0.65 | 14 | SOF Mission | 1 | 0.75 | 0.99 | 15 | Air Recon/Surveillance | 1 | 0.35 | 0.95 | *Paramilitary safe house or weapons cache* |
| Paramilitary Cell | 2 | – | 0.65 | 14 | SOF Mission | 1 | 0.50 | 0.99 | | | | | | *5,000 paramilitary personnel per cell* |
| Paramilitary Vehicle Group | 2 | – | 0.65 | 14 | SOF Mission | 1 | 0.50 | 0.99 | 15 | Air Recon/Surveillance | 1 | 0.45 | 0.95 | *62 vehicles per group* |
| Training Camp Area | 4 | – | 0.65 | 15 | Air Recon/Surveillance | 1 | 0.90 | 0.95 | 14 | SOF Mission | 1 | 0.9 | 0.99 | *Terrorist indoctrination or training camp* |
| Infiltration Route | 23 | – | 0.65 | 15 | Air Recon/Surveillance | 1 | 0.75 | 0.65 | 14 | SOF Mission | 1 | 0.75 | 0.99 | *Border infiltration route supporting foreign terrorists* |
| Ethnic Neighborhood | 18 | – | 0.95 | 15 | Air Recon/Surveillance | 1 | 0.75 | 0.65 | 14 | SOF Mission | 1 | 0.85 | 0.99 | *Specific neighborhood at risk for ethnic cleansing* |
| Refugee Camp | 9 | – | 0.95 | 25 | Humanitarian Relief USAID | 1 | 0.95 | 0.95 | 14 | SOF Mission | 1 | 0.95 | 0.99 | *Refugee camp established near border* |
| Key Urban Area | 5 | – | 0.95 | 15 | Air Recon/Surveillance | 1 | 0.85 | 0.95 | 14 | SOF Mission | 1 | 0.85 | 0.99 | *Urban area likely to be at risk for major combat operations* |
| TV/Radio/Newspaper Media | 2 | – | 0.95 | 15 | Air Recon/Surveillance | 1 | 0.95 | 0.95 | 14 | SOF Mission | 1 | 0.95 | 0.99 | *Media outlet controlled by regime* |
| Oilfield/Processing Complex | 2 | – | 0.99 | 15 | Air Recon/Surveillance | 1 | 0.95 | 0.95 | 14 | SOF Mission | 1 | 0.95 | 0.99 | *Complex of 3 oilfields plus 1 processing facility* |
| Key Agriculture Area | 1 | – | 0.99 | 15 | Air Recon/Surveillance | 1 | 0.95 | 0.95 | 14 | SOF Mission | 1 | 0.95 | 0.99 | *Key agricultural area* |
| Oil/Gas Pipeline | 10 | – | 0.99 | 15 | Air Recon/Surveillance | 1 | 0.95 | 0.95 | 14 | SOF Mission | 1 | 0.95 | 0.99 | *Oil/gas transportation pipeline* |
| Key Worker Group | 4 | – | 0.95 | 14 | SOF Mission | 1 | 0.85 | 0.99 | | | | | | *Regional group of 10,000 technical workers* |
| Insurgency Cell | 4 | – | 0.85 | 14 | SOF Mission | 1 | 0.75 | 0.99 | | | | | | *Potentially sympathetic insurgency group within region* |
| Key Insurgency Leader | 2 | – | 0.85 | 14 | SOF Mission | 1 | 0.85 | 0.99 | | | | | | *Key leader of potentially sympathetic insurgency group* |
| Key Parliament Official | 4 | – | 0.85 | 14 | SOF Mission | 1 | 0.85 | 0.99 | | | | | | *Potentially sympathetic member of parliament* |
| City/Town Mayor | 4 | – | 0.85 | 14 | SOF Mission | 1 | 0.85 | 0.99 | | | | | | *Administrative leader of city, town, or village* |
| City Utility Manager | 7 | – | 0.85 | 14 | SOF Mission | 1 | 0.85 | 0.99 | | | | | | *Manager of electric, gas, water, or sewage facility* |
| Military Commander | 1 | – | 0.85 | 14 | SOF Mission | 1 | 0.85 | 0.99 | | | | | | *Division or brigade commander willing to capitulate* |
| Key Cleric Official | 1 | – | 0.85 | 14 | SOF Mission | 1 | 0.85 | 0.99 | | | | | | *Influential religious cleric within region* |
| Key Tribal Warlord | 2 | – | 0.85 | 14 | SOF Mission | 1 | 0.85 | 0.99 | | | | | | *Influential leader of key tribe or clan within region* |
| Key Ethnic Region | 1 | – | 0.95 | 26 | PSYOPS Campaign Mil | 1 | 0.90 | 0.80 | 14 | SOF Mission | 1 | 0.65 | 0.8 | *Potentially sympathetic civilian population* |
| Blue Airmobile Unit | 4 | – | 0.99 | 11 | Ground Force Operation | 1 | 0.95 | 0.99 | | | | | | *Initial US/coalition assault forces to be prepositioned* |
| Blue Marine Unit | 8 | – | 0.99 | 11 | Ground Force Operation | 1 | 0.95 | 0.99 | | | | | | *Initial US/coalition assault forces to be prepositioned* |
| Blue Ground Unit | 2 | – | 0.99 | 11 | Ground Force Operation | 1 | 0.95 | 0.99 | | | | | | *Initial US/coalition assault forces to be prepositioned* |
| Overflight Agreement | 1 | – | 0.99 | 1 | Diplomatic Initiative | 1 | 0.85 | 0.99 | | | | | | *Overflight agreement for airlifting BLUE assault forces* |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Transit Agreement | 5 | – | 0.99 | 1 | Diplomatic Initiative | 1 | 0.85 | 0.99 | | | | | | | *Transit route agreement for deploying BLUE assault forces* |
| Staging Area Agreement | 3 | – | 0.99 | 1 | Diplomatic Initiative | 1 | 0.85 | 0.99 | | | | | | | *Staging area agreement for deploying BLUE assault forces* |
| Forces Agreement | 1 | – | 0.99 | 1 | Diplomatic Initiative | 1 | 0.85 | 0.99 | | | | | | | *Military-to-military agreement for cooperative operations* |
| Pol Neutrality Agreement | 1 | – | 0.99 | 1 | Diplomatic Initiative | 1 | 0.75 | 0.99 | | | | | | | *Neutrality agreement that minimizes political interference* |
| Anti-Sanctuary Agreement | 1 | – | 0.99 | 1 | Diplomatic Initiative | 1 | 0.75 | 0.99 | | | | | | | *Agreement that removes terrorist sanctuaries along border* |
| Mil Neutrality Agreement | 1 | – | 0.99 | 1 | Diplomatic Initiative | 1 | 0.75 | 0.99 | | | | | | | *Military-to-military agreement for pursuit of terrorists* |

## INITIAL FORCED ENTRY (PART 1 OF 2)

| NCA Index | NCA Objective | SES Index | SES Value | Strategic Endstate | CoG Index | CoG Value | Center of Gravity | FE Index | PMESII Functional Element | Effect Class | Operational Effect | NMP Class Index | % Contrib | Individual NMP Index | Node Mission Package |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Conduct Deception Campaign | 1 | 70 | Fix Adversary Forces | 1 | 15 | Eastern Surveillance | 1 | Long Range Surveillance | 1 | Destroy | 1 | 100% | 1-4 | Lg Range Surveillance Site |
| | | | | | | | | 2 | Tactical Reconnaissance | 12 | Deception | 2 | 100% | 5-8 | Tactical Recon Site |
| | | | | | 2 | 15 | Eastern Combat Divisions | 3 | Assembly Areas / Def Positions | 2 | Neutralize | 3 | 100% | 9-10 | Ground Combat Division |
| | | | | | 3 | 10 | Eastern Advance Routes | 4 | Border Civilian Population | 13 | Warning | 4 | 100% | 11-12 | Border Route Civilian Area |
| 2 | Conduct Initial Forced Enry | 2 | 80 | Air/Sea Superiority | 4 | 20 | Adversary Airpower Systems | 5 | Fighter/Interceptors | 1 | Destroy | 5 | 100% | 13-16 | Fighter Aircraft Squadron |
| | | | | | | | | 6 | Military/Civilian Airfields | 1 | Destroy | 6 | 70% | 17-18 | Military Airfield Runway |
| | | | | | | | | | | | | 7 | 30% | 19-21 | Civilian Airfield Runway |
| | | | | | | | | 7 | Airfield Support Facilities | 1 | Destroy | 8 | 100% | 22-26 | Fuel Storage Facility |
| | | | | | | | | 8 | EW Radar Networks | 1 | Destroy | 9 | 100% | 27 | EW Radar Complex |
| | | | | | | | | 9 | GCI Radar Networks | 1 | Destroy | 10 | 100% | 28 | SAM Control Center |
| | | | | | | | | 10 | SAM Control Radars | 1 | Destroy | 11 | 100% | 29 | SAM Control Radar Site |
| | | | | | | | | 11 | SAM Batteries | 1 | Destroy | 12 | 100% | 30-32 | SAM Launcher Battery |
| | | | | | 5 | 15 | Adversary Seapower Systems | 12 | Naval Combatant Ships | 1 | Destroy | 13 | 100% | 33 | Naval Ship Group |
| | | | | | | | | 13 | Submarines | 1 | Destroy | 14 | 100% | 34 | Submarine |
| | | | | | | | | 14 | Littoral Patrol Boats | 1 | Destroy | 15 | 100% | 35-36 | Patrol Boat Group |
| | | | | | | | | 15 | Military Seaport Docks | 2 | Neutralize | 16 | 100% | 37-41 | Military Dock Complex |
| | | | | | | | | 16 | Seaport Support Facilities | 2 | Neutralize | 17 | 100% | 42-46 | Sea Support Facility |
| | | | | | | | | 17 | Paramilitary Sea Threat | 1 | Destroy | 18 | 100% | 47-48 | Paramilitary Boat Group |
| | | | | | | | | 18 | Sea Mine Clearance Areas | 1 | Destroy | 19 | 100% | 49-50 | Sea Mine Area |
| | | 3 | 75 | Persistent ISR | 6 | 10 | Key Areas of Interest | 19 | Red Military Installations | 8 | Monitor | 20 | 100% | 51-70 | Military Garrison |
| | | | | | | | | 20 | Red Staging Areas | 8 | Monitor | 21 | 100% | 71-72 | Military Staging Area |
| | | | | | | | | 21 | Red Defensive Positions | 8 | Monitor | 22 | 100% | 73-98 | Defensive Fortification |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | 22 | Red Approach Routes | 8 | Monitor | 23 | 100% | 99-100 | Key LOC Route |
| | | | | | | | | 23 | Paramilitary Stockpiles | 8 | Monitor | 24 | 100% | 101-276 | Weapons Cache |
| | | | | | | | | 24 | Paramilitary Units | 8 | Monitor | 25 | 100% | 277-278 | Paramilitary Cell |
| | | | | | | | | 25 | Paramilitary Vehicles | 8 | Monitor | 26 | 100% | 279-280 | Paramilitary Vehicle Group |
| | | | | | | | | 26 | Terrorist Training Camps | 8 | Monitor | 27 | 100% | 281-284 | Training Camp Area |
| | | | | | | | | 27 | Border Infiltration Routes | 8 | Monitor | 28 | 100% | 285-307 | Infiltration Route |
| | | 4 | 80 | Eliminate WMD Threat | 7 | 20 | WMD Stockpiles / Delivery Sys | 28 | WMD Delivery Systems | 1 | Destroy | 29 | 100% | 308-312 | WMD TEL Battery |
| | | | | | | | | 29 | WMD Stockpiles | 1 | Destroy | 30 | 100% | 313-317 | WMD Storage Facility |
| | | 5 | 80 | Degrade Regime Leadership | 8 | 15 | Top Regime Leadership | 30 | Regime Leader Residence | 1 | Destroy | 31 | 100% | 318-325 | Regime Residence/Bunker |
| | | | | | | | | 31 | Political Party Facilities | 1 | Destroy | 32 | 80% | 326 | Political Party Hqtrs |
| | | | | | | | | | | | | 33 | 20% | 327-336 | Local Party Office |
| | | | | | | | | 32 | Political C2 Network | 1 | Destroy | 34 | 70% | 337 | Political C2 Node |
| | | | | | | | | | | | | 35 | 30% | 338 | Alternate Pol C2 Node |
| | | | | | | | | 33 | Regime Financial Network | 2 | Neutralize | 36 | 100% | 339 | National Financial Net |
| | | 6 | 65 | Conduct Amphibious Assault | 9 | 20 | Western Border Defenses | 34 | Physical Defenses | 1 | Destroy | 37 | 100% | 340-359 | Physical Impediments |
| | | | | | 10 | 20 | Western Security Forces | 35 | Conscript Military Units | 1 | Destroy | 38 | 100% | 360-362 | Military Conscript Company |
| | | | | | 11 | 15 | Western Paramilitary | 36 | West Paramilitary Stockpiles | 1 | Destroy | 39 | 100% | 363-367 | Weapons Cache |
| | | | | | | | | 37 | West Paramilitary Units | 1 | Destroy | 40 | 100% | 368-374 | Paramilitary Cell |
| | | | | | | | | 38 | West Paramilitary Vehicles | 1 | Destroy | 41 | 100% | 375-383 | Paramilitary Vehicle Group |
| | | 7 | 75 | Conduct Airmobile Assault | 12 | 20 | Key Airfield Defenses | 39 | Elite Security Units | 1 | Destroy | 42 | 100% | 384-393 | Elite Security Company |
| | | | | | 13 | 15 | Southern Paramilitary | 40 | South Paramilitary Stockpiles | 1 | Destroy | 43 | 100% | 394-398 | Weapons Cache |
| | | | | | | | | 41 | South Paramilitary Units | 1 | Destroy | 44 | 100% | 399-403 | Paramilitary Cell |
| | | | | | | | | 42 | South Paramilitary Vehicles | 1 | Destroy | 45 | 100% | 404-408 | Paramilitary Vehicle Group |
| | | 8 | 60 | Build Insurgency Axis | 14 | 15 | Capital Area Paramilitary | 43 | Cap Paramilitary Stockpiles | 1 | Destroy | 46 | 100% | 409-413 | Weapons Cache |
| | | | | | | | | 44 | Cap Paramilitary Units | 1 | Destroy | 47 | 100% | 414-418 | Paramilitary Cell |
| | | | | | | | | 45 | Cap Paramilitary Vehicles | 1 | Destroy | 48 | 100% | 419-423 | Paramilitary Vehicle Group |
| 3 | Set Conditions for STRO | 9 | 70 | Key Leader Capitulation | 15 | 10 | Western/Southern Leaders | 46 | Ministry/Parliament Leaders | 9 | Contact | 49 | 100% | 424-433 | Ministry/Parliament Leader |
| | | | | | | | | 47 | City/Town Mayors | 9 | Contact | 50 | 100% | 434-436 | City/Town Mayor |
| | | | | | | | | 48 | City/Town Utility Mgrs | 9 | Contact | 51 | 100% | 437-442 | City/Town Utility Mgr |
| | | | | | | | | 49 | Military Commanders | 9 | Contact | 52 | 100% | 443-444 | Military Commander |
| | | 10 | 70 | Build Population Support | 16 | 5 | Cultural/Religious Support | 50 | Key Religious Leaders | 9 | Contact | 53 | 100% | 445-449 | Key Cleric or Religious Ldr |
| | | | | | | | | 51 | Clan/Tribal Leaders | 9 | Contact | 54 | 100% | 450-451 | Clan Chief / Warlord |
| | | | | | 17 | 20 | Key Route Traffic | 52 | Key Route Population | 6 | Compliance | 55 | 100% | 452-454 | Local Route Neighborhood |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 11 | 60 | Build Humanitarian Base | 18 | 15 | Country Green Staging Areas | 53 | Humanitarian Stockpiles | 15 | Deploy | 56 | 100% | 455-579 | Relief Supply Load |
| | | | | | | | | 54 | Staging Areas | 4 | Build | 57 | 100% | 580-581 | Staging Site |
| | | 12 | 70 | Protect National Resources | 19 | 10 | Resource Infrastructure | 55 | Oil / Mine / Agri Facilities | 3 | Protect | 58 | 100% | 582-584 | Oilfield, Mine or Crop Field |
| | | | | | | | | 56 | Pipelines / Transport Sys | 3 | Protect | 59 | 100% | 585-594 | Pipeline or Trans Facility |
| | | | | | | | | 57 | Technician / Worker Groups | 3 | Protect | 60 | 100% | 595-598 | Local Technician Group |
| | | | | | | | | 58 | Paramilitary Units | 1 | Destroy | 61 | 100% | 599-602 | Paramilitary Cell |
| | | | | | | | | 59 | Paramilitary Vehicles | 1 | Destroy | 62 | 100% | 603-604 | Paramilitary Vehicle Group |
| | | 13 | 60 | Protect Minority Population | 20 | 10 | Ethnic Neighborhoods | 60 | Paramilitary Units | 1 | Destroy | 63 | 100% | 605-608 | Paramilitary Cell |
| | | | | | | | | 61 | Paramilitary Vehicles | 1 | Destroy | 64 | 100% | 609-610 | Paramilitary Vehicle Group |

## INITIAL FORCED ENTRY (PART 2 OF 2)

| Node Mission Package | # of NMPs | NMP Rate | Prob of Intel Update | Action Class | Primary Action Class | Sorties /NMP | Prob Success | Prob Feedback | Action Class | Secondary Action Class | Sorties /NMP | Prob Success | Prob Feedback | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lg Range Surveillance Site | 4 | -- | 0.95 | 7 | Fixed Wing Air Interdiction | 2 | 0.95 | 0.95 | 4 | Air Cruise Missile | 2 | 0.95 | 0.95 | Must destroy all sites for effective deception |
| Tactical Recon Site | 4 | -- | 0.95 | 7 | Fixed Wing Air Interdiction | 2 | 0.95 | 0.95 | 4 | Air Cruise Missile | 2 | 0.05 | 0.95 | Must spoof all sites for effective deception |
| Ground Combat Division | 2 | -- | 0.95 | 7 | Fixed Wing Air Interdiction | 20 | 0.95 | 0.95 | | | | | | Ground combat divisions are pinned down in assembl area |
| Border Route Civilian Area | 2 | -- | 0.99 | 26 | PSYOPS Campaign (Mil) | 2 | 0.9 | 0.8 | | | | | | Civilian population along advance routes are warned combat operations |
| Fighter Aircraft Squadron | 4 | -- | 0.95 | 7 | Fixed Wing Air Interdiction | 6 | 0.85 | 0.95 | 4 | Air Cruise Missile | 24 | 0.95 | 0.95 | Destroy facilities that have been reconstituted after Phase I |
| Military Airfield Runway | 2 | -- | 0.99 | 7 | Fixed Wing Air Interdiction | 2 | 0.95 | 0.95 | | | | | | Destroy facilities that have been reconstituted after Phase I |
| Civilian Airfield Runway | 3 | -- | 0.99 | 7 | Fixed Wing Air Interdiction | 2 | 0.95 | 0.95 | | | | | | Destroy facilities that have been reconstituted after Phase I |
| Fuel Storage Facility | 5 | -- | 0.99 | 7 | Fixed Wing Air Interdiction | 2 | 0.95 | 0.95 | 4 | Air Cruise Missile | 2 | 0.95 | 0.95 | Destroy facilities that have been reconstituted after Phase I |
| EW Radar Complex | 1 | -- | 0.95 | 7 | Fixed Wing Air Interdiction | 6 | 0.95 | 0.95 | 4 | Air Cruise Missile | 6 | 0.95 | 0.95 | Destroy facilities that have been reconstituted after Phase I |
| SAM Control Center | 1 | -- | 0.95 | 7 | Fixed Wing Air Interdiction | 1 | 0.95 | 0.95 | 4 | Air Cruise Missile | 1 | 0.95 | 0.95 | Destroy facilities that have been reconstituted after Phase I |
| SAM Control Radar Site | 1 | -- | 0.85 | 7 | Fixed Wing Air Interdiction | 6 | 0.95 | 0.95 | | | | | | Destroy facilities that have been reconstituted after Phase I |
| SAM Launcher Battery | 3 | -- | 0.85 | 7 | Fixed Wing Air Interdiction | 5 | 0.95 | 0.95 | | | | | | Destroy facilities that have been reconstituted after Phase I |
| Naval Ship Group | 1 | -- | 0.95 | 7 | Fixed Wing Air Interdiction | 4 | 0.75 | 0.95 | 5 | Naval Surface Engagement | 4 | 0.9 | 0.95 | Destroy facilities that have been reconstituted after Phase I |
| Submarine | 1 | -- | 0.65 | 5 | Naval Surface Engagement | 1 | 0.50 | 0.75 | | | | | | Destroy facilities that have been reconstituted after Phase I |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Patrol Boat Group | 2 | -- | 0.85 | 5 | Naval Surface Engagement | 2 | 0.75 | 0.95 | 7 | Fixed Wing Air Interdiction | 2 | 0.65 | 0.95 | Destroy facilities that have been reconstituted after Phase I |
| Military Dock Comple: | 5 | -- | 0.99 | 5 | Naval Surface Engagement | 2 | 0.85 | 0.95 | 7 | Fixed Wing Air Interdiction | 4 | 0.95 | 0.95 | Destroy facilities that have been reconstituted after Phase I |
| Sea Support Facility | 5 | -- | 0.99 | 5 | Naval Surface Engagement | 2 | 0.85 | 0.95 | 7 | Fixed Wing Air Interdiction | 4 | 0.95 | 0.95 | Destroy facilities that have been reconstituted after Phase I |
| Paramilitary Boat Group | 2 | -- | 0.85 | 5 | Naval Surface Engagement | 4 | 0.75 | 0.95 | 7 | Fixed Wing Air Interdiction | 8 | 0.65 | 0.95 | Destroy facilities that have been reconstituted after Phase I |
| Sea Mine Area | 2 | -- | 0.85 | 5 | Naval Surface Engagement | 2 | 0.85 | 0.95 | 7 | Fixed Wing Air Interdiction | 2 | 0.45 | 0.95 | Destroy facilities that have been reconstituted after Phase I |
| Military Garrison | 20 | -- | 0.99 | 15 | Air Recon/Surveillance | 1 | 0.95 | 0.95 | 14 | SOF Mission | 1 | 0.85 | 0.99 | Continue monitoring |
| Military Staging Area | 2 | -- | 0.85 | 15 | Air Recon/Surveillance | 1 | 0.95 | 0.95 | 14 | SOF Mission | 1 | 0.85 | 0.99 | Continue monitoring |
| Defensive Fortification | 26 | -- | 0.85 | 15 | Air Recon/Surveillance | 1 | 0.95 | 0.95 | 14 | SOF Mission | 1 | 0.85 | 0.99 | Continue monitoring |
| Key LOC Route | 2 | -- | 0.99 | 15 | Air Recon/Surveillance | 1 | 0.85 | 0.95 | 14 | SOF Mission | 1 | 0.85 | 0.99 | Continue monitoring |
| Weapons Cache | 176 | -- | 0.65 | 14 | SOF Mission | 1 | 0.75 | 0.99 | 15 | Air Recon/Surveillance | 1 | 0.35 | 0.95 | Continue monitoring |
| Paramilitary Cell | 2 | -- | 0.65 | 14 | SOF Mission | 1 | 0.50 | 0.99 | | | | | | Continue monitoring |
| Paramilitary Vehicle Group | 2 | -- | 0.65 | 14 | SOF Mission | 1 | 0.50 | 0.99 | 15 | Air Recon/Surveillance | 1 | 0.45 | 0.95 | Continue monitoring |
| Training Camp Area | 4 | -- | 0.65 | 15 | Air Recon/Surveillance | 1 | 0.90 | 0.95 | 14 | SOF Mission | 1 | 0.9 | 0.99 | Continue monitoring |
| Infiltration Route | 23 | -- | 0.65 | 15 | Air Recon/Surveillance | 1 | 0.75 | 0.65 | 14 | SOF Mission | 1 | 0.75 | 0.99 | Continue monitoring |
| WMD TEL Battery | 5 | -- | 0.85 | 7 | Fixed Wing Air Interdiction | 2 | 0.95 | 0.95 | | | | | | |
| WMD Storage Facility | 5 | -- | 0.99 | 7 | Fixed Wing Air Interdiction | 2 | 0.95 | 0.95 | 4 | Air Cruise Missile | 2 | 0.95 | 0.95 | |
| Regime Residence/Bunker | 8 | -- | 0.99 | 7 | Fixed Wing Air Interdiction | 2 | 0.95 | 0.95 | 4 | Air Cruise Missile | 2 | 0.95 | 0.95 | |
| Political Party Hqtrs | 1 | -- | 0.99 | 7 | Fixed Wing Air Interdiction | 2 | 0.95 | 0.95 | 4 | Air Cruise Missile | 2 | 0.95 | 0.95 | |
| Local Party Office | 10 | -- | 0.99 | 7 | Fixed Wing Air Interdiction | 2 | 0.95 | 0.95 | 4 | Air Cruise Missile | 2 | 0.95 | 0.95 | |
| Political C2 Node | 1 | -- | 0.95 | 7 | Fixed Wing Air Interdiction | 1 | 0.95 | 0.95 | 4 | Air Cruise Missile | 1 | 0.95 | 0.95 | |
| Alternate Pol C2 Node | 1 | -- | 0.95 | 7 | Fixed Wing Air Interdiction | 1 | 0.95 | 0.95 | 4 | Air Cruise Missile | 1 | 0.95 | 0.95 | |
| National Financial Net | 1 | -- | 0.85 | 21 | Legal Proceedings | 1 | 0.65 | 0.99 | | | | | | |
| Physical Impediments | 20 | -- | 0.99 | 10 | Ground Artillery / MLRS | 1 | 0.95 | 0.95 | 11 | Ground Force Operation | 1 | 0.85 | 0.95 | 1 artillery sortie or 1 company-size ground sortie per NMP |
| Military Conscript Company | 3 | -- | 0.95 | 11 | Ground Force Operation | 1 | 0.95 | 0.99 | 8 | Fixed Wing Killbox / CAS | 2 | 0.85 | 0.9 | 1 company-size ground sortie or 2 fixed wing CAS sorties per NMP |
| Weapons Cache | 5 | -- | 0.65 | 11 | Ground Force Operation | 1 | 0.95 | 0.99 | 8 | Fixed Wing Killbox / CAS | 2 | 0.85 | 0.9 | 1 company-size ground sortie or 2 fixed wing CAS sorties per NMP |
| Paramilitary Cell | 7 | -- | 0.8 | 11 | Ground Force Operation | 1 | 0.95 | 0.99 | 8 | Fixed Wing Killbox / CAS | 2 | 0.85 | 0.9 | 1 company-size ground sortie or 2 fixed wing CAS sorties per NMP |
| Paramilitary VehicleGroup | 9 | -- | 0.8 | 11 | Ground Force Operation | 1 | 0.95 | 0.99 | 8 | Fixed Wing Killbox / CAS | 2 | 0.85 | 0.9 | 1 company-size ground sortie or 2 fixed wing CAS sorties per NMP |
| Elite Security Company | 10 | -- | 0.8 | 11 | Ground Force Operation | 1 | 0.95 | 0.99 | 8 | Fixed Wing Killbox / CAS | 2 | 0.85 | 0.9 | 1 company-size ground sortie or 2 fixed wing CAS sorties per NMP |
| Weapons Cache | 5 | -- | 0.65 | 8 | Fixed Wing Killbox / CAS | 2 | 0.85 | 0.9 | | | | | | 2 fixed wing CAS sorties per NMP |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Paramilitary Cell | 5 | -- | 0.8 | 8 | Fixed Wing Killbox / CAS | 2 | 0.85 | 0.9 | | | | | | 2 fixed wing CAS sorties per NMP |
| Paramilitary Vehicle Group | 5 | -- | 0.8 | 8 | Fixed Wing Killbox / CAS | 2 | 0.85 | 0.9 | | | | | | 2 fixed wing CAS sorties per NMP |
| Weapons Cache | 5 | -- | 0.65 | 8 | Fixed Wing Killbox / CAS | 2 | 0.85 | 0.9 | | | | | | 2 fixed wing CAS sorties per NMP |
| Paramilitary Cell | 5 | -- | 0.8 | 8 | Fixed Wing Killbox / CAS | 2 | 0.85 | 0.9 | | | | | | 2 fixed wing CAS sorties per NMP |
| Paramilitary Vehicle Group | 5 | -- | 0.8 | 8 | Fixed Wing Killbox / CAS | 2 | 0.85 | 0.9 | | | | | | 2 fixed wing CAS sorties per NMP |
| Ministry/Parliament Leader | 10 | -- | 0.99 | 14 | SOF Mission | 1 | 0.75 | 0.99 | | | | | | |
| City/Town Mayor | 3 | -- | 0.85 | 14 | SOF Mission | 1 | 0.75 | 0.99 | | | | | | |
| City/Town Utility Mgr | 6 | -- | 0.85 | 14 | SOF Mission | 1 | 0.75 | 0.99 | | | | | | |
| Military Commander | 2 | -- | 0.85 | 14 | SOF Mission | 1 | 0.75 | 0.99 | | | | | | |
| Key Cleric or Religious Ldr | 5 | -- | 0.85 | 14 | SOF Mission | 1 | 0.75 | 0.99 | | | | | | |
| Clan Chief / Warlord | 2 | -- | 0.85 | 14 | SOF Mission | 1 | 0.75 | 0.99 | | | | | | |
| Local Route Neighborhood | 3 | -- | 0.99 | 27 | Information Campaign (Mil) | 2 | 0.9 | 0.8 | | | | | | |
| Relief Supply Load | 125 | 25 | 0.99 | 24 | Humanitarian Relief (Mil) | 1 | 0.99 | 0.99 | | | | | | 20 Tons/Mission x 125 Missions |
| Staging Site | 2 | -- | 0.99 | 29 | Civil Engineering Proj (Mil) | 1 | 0.99 | 0.99 | | | | | | |
| Oilfield, Mine or Crop Field | 3 | -- | 0.99 | 11 | Ground Force Operation | 1 | 0.9 | 0.99 | | | | | | 1 company-size ground sortie per site |
| Pipeline or Trans Facility | 10 | -- | 0.99 | 11 | Ground Force Operation | 1 | 0.9 | 0.99 | | | | | | 1 company-size ground sortie per site |
| Local Technician Group | 4 | -- | 0.99 | 11 | Ground Force Operation | 1 | 0.9 | 0.99 | | | | | | 1 company-size ground sortie per site |
| Paramilitary Cell | 4 | -- | 0.8 | 8 | Fixed Wing Killbox / CAS | 2 | 0.85 | 0.9 | | | | | | 2 fixed wing CAS sorties per NMP |
| Paramilitary VehicleGroup | 2 | -- | 0.8 | 8 | Fixed Wing Killbox / CAS | 2 | 0.85 | 0.9 | | | | | | 2 fixed wing CAS sorties per NMP |
| Paramilitary Cell | 4 | -- | 0.8 | 8 | Fixed Wing Killbox / CAS | 2 | 0.85 | 0.9 | | | | | | 2 fixed wing CAS sorties per NMP |
| Paramilitary VehicleGroup | 2 | -- | 0.8 | 8 | Fixed Wing Killbox / CAS | 2 | 0.85 | 0.9 | | | | | | 2 fixed wing CAS sorties per NMP |

## DECISIVE OPERATIONS (PART 1 OF 2)

| NCA Index | NCA Objective | SES Index | SES Value | Strategic Endstate | CoG Index | CoG Value | Center of Gravity | FE Index | PMESII Functional Element | Effect Class | Operational Effect | NMP Class Index | % Contrib | Individual NMP Index | Node Mission Package |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Eliminate WMD Capability | 1 | 80 | WMD Under Positive Control | 1 | 20 | WMD Stockpiles / Delivery | 1 | WMD TELs | 1 | Destroy | 1 | 100% | 1-10 | WMD TEL Battery |
| | | | | | | | | 2 | WMD Storage / Assembly | 1 | Destroy | 2 | 100% | 11-15 | WMD Storage Facility |
| | | | | | 2 | 15 | WMD Labs / Production | 3 | WMD Research Labs / Plants | 11 | Capture | 3 | 100% | 16-17 | WMD Lab or Plant |
| 2 | Eliminate Regime Power | 2 | 80 | Regime Leaders Neutralized | 3 | 15 | Key Regime Actors | 4 | Key Regime Leaders | 11 | Capture | 4 | 100% | 18-67 | Regime Official |
| | | | | | | | | 5 | Regime Residences / Bunkers | 1 | Destroy | 5 | 100% | 68-117 | Residence or Bunker |
| | | 3 | 65 | Regime Party Neutralized | 4 | 10 | Political/Finance Nets | 6 | Political Party Facilities | 1 | Destroy | 6 | 80% | 118 | Political Party Hqtrs |
| | | | | | | | | | | | | 7 | 20% | 119-123 | Local Party Office |
| | | | | | | | | 7 | Regime Financial Networks | 2 | Neutralize | 8 | 100% | 124 | National Financial Net |
| | | | | | 5 | 10 | Capital Area Paramilitary | 8 | Paramilitary Cells | 1 | Destroy | 9 | 100% | 125-144 | Paramilitary Cell |
| 3 | Neutralize Combat Divisions | 4 | 80 | Divs Capitulate / Destroyed | 6 | 15 | Capitualting Divisions | 9 | Division Leadership | 3 | Protect | 10 | 100% | 145-146 | Division Commander |
| | | | | | | | | 10 | Division Equipment | 3 | Protect | 11 | 100% | 147-148 | Vehicle Assembly Area |
| | | | | | | | | 11 | Division Troops | 13 | Protect | 12 | 100% | 149-152 | Local Area Troops |
| | | | | | | | | 12 | Disrupting Paramil Units | 1 | Destroy | 13 | 100% | 153-154 | Paramilitary Cell |
| | | | | | | | | 13 | Disrupting Paramil Vehicles | 1 | Destroy | 14 | 100% | 155-158 | Paramilitary Vehicle Group |
| | | | | | 7 | 20 | Resisting Divisions | 14 | Division Leadership | 11 | Capture | 15 | 100% | 159-173 | Division Leaders |
| | | | | | | | | 15 | Division Equipment | 1 | Destroy | 16 | 80% | 174-197 | Combat Vehicle Group |
| | | | | | | | | | | | | 17 | 20% | 198-245 | Support Vehicle Group |
| | | | | | | | | 16 | Division troops | 1 | Destroy | 18 | 100% | 246-317 | Combat Company |
| 4 | Secure Natural Resources | 5 | 70 | Protect National Resources | 8 | 10 | Resource Infrastructure | 17 | Oil / Mine / Agri Facilities | 3 | Protect | 19 | 100% | 318-330 | Oilfield, Mine or Crop Field |
| | | | | | | | | 18 | Pipelines / Transport Sys | 3 | Protect | 20 | 100% | 331-350 | Pipeline or Trans Facility |
| | | | | | | | | 19 | Technician / Worker Groups | 3 | Protect | 21 | 100% | 351-360 | Local Technician Group |
| | | | | | | | | 20 | Paramilitary Units | 1 | Destroy | 22 | 100% | 361-368 | Paramilitary Cell |
| | | | | | | | | 21 | Paramilitary Vehicles | 1 | Destroy | 23 | 100% | 369-373 | Paramilitary Vehicle Group |
| 5 | Protect / Sustain Civilians | 6 | 70 | Keep Population in Homes | 9 | 10 | Key Population Leaders | 22 | Cultural / Religious Ldrs | 9 | Contact | 24 | 100% | 374-375 | Key Cleric or Religious Ldr |
| | | | | | | | | 23 | Clan/Tribal Leaders | 6 | Compliance | 25 | 100% | 376-390 | Clan Chief / Warlord |
| | | | | | 10 | 15 | Civilian Refuge Traffic | 24 | Key Route Population | 6 | Compliance | 26 | 100% | 391-394 | Local Route Neighborhood |
| | | 7 | 70 | Humanitarian Relief | 11 | 15 | Distribution Relief Areas | 25 | Relief Supplies | 15 | Deploy | 27 | 100% | 395-402 | Relief Supply Load |
| | | | | | | | | 26 | Distribution Sites | 4 | Build | 28 | 100% | 403-406 | Distribution Site |
| | | | | | | | | 27 | Paramilitary Units | 1 | Destroy | 29 | 100% | 407-411 | Paramilitary Cell |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | 28 | Paramilitary Vehicles | 1 | Destroy | 30 | 100% | 412-413 | Paramilitary Vehicle Group |
| | | 8 | 70 | Protect Minority Population | 12 | 10 | Ethnic Neighborhoods | 29 | Paramilitary Units | 1 | Destroy | 31 | 100% | 414-415 | Paramilitary Cell |
| | | | | | | | | 30 | Paramilitary Vehicles | 1 | Destroy | 32 | 100% | 416-417 | Paramilitary Vehicle Group |
| 6 | Establish Law and Order | 9 | 75 | Destroy Terrorist Base | 13 | 20 | Terrorist Operations | 31 | Training Camps | 1 | Destroy | 33 | 100% | 418-427 | Training Facility |
| | | | | | | | | 32 | Terrorist Bunkers | 1 | Destroy | 34 | 100% | 428-452 | Bunker Complex |
| | | | | | | | | 33 | Terrorist Personnel | 1 | Destroy | 35 | 100% | 453-455 | Terrorist Cell |
| | | 10 | 75 | Stop Foreign Infiltrators | 14 | 15 | Foreign Infiltration Cells | 34 | Terrorist Personnel | 1 | Destroy | 36 | 100% | 456-458 | Terrorist Cell |
| | | 11 | 60 | Apprehend Criminals | 15 | 10 | Criminal Networks | 35 | Criminal Personnel | 11 | Capture | 37 | 100% | 459-463 | Criminal Cell |
| 7 | Protect Coalition Logistics | 12 | 80 | Protect Convoys / Assby Areas | 16 | 15 | Coalition Supply Convoys | 36 | Convoy Security | 3 | Protect | 38 | 100% | 464-473 | Convoy Overwatch Route |
| | | | | | | | | 37 | Paramilitary Units | 1 | Destroy | 39 | 100% | 474-476 | Paramilitary Cell |
| | | | | | | | | 38 | Paramilitary Vehicles | 1 | Destroy | 40 | 100% | 477-479 | Paramilitary Vehicle Group |
| | | | | | | | | 39 | Terrorist Cells | 1 | Destroy | 41 | 100% | 480-483 | Terrorist Cells |
| | | | | | 17 | 20 | Coalition Assembly Areas | 40 | Assembly Area Security | 3 | Protect | 42 | 100% | 484-498 | Assembly Area Perimeter |
| | | | | | | | | 41 | Paramilitary Units | 1 | Destroy | 43 | 100% | 499 | Paramilitary Cell |
| | | | | | | | | 42 | Paramilitary Vehicles | 1 | Destroy | 44 | 100% | 500 | Paramilitary Vehicle Group |
| | | | | | | | | 43 | Terrorist Cells | 1 | Destroy | 45 | 100% | 501 | Terrorist Cell |



## DECISIVE OPERATIONS (PART 2 OF 2)

| Node Mission Package | # of NMPs | NMP Rate | Prob of Intel Update | Action Class | Primary Action Class | Sorties /NMP | Prob Success | Prob Feedback | Action Class | Secondary Action Class | Sorties /NMP | Prob Success | Prob Feedback | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WMD TEL Battery | 10 | -- | 0.85 | 7 | Fixed Wing Air Interdiction | 2 | 0.95 | 0.95 | | | | | | |
| WMD Storage Facility | 5 | -- | 0.99 | 7 | Fixed Wing Air Interdiction | 2 | 0.95 | 0.95 | 4 | Air Cruise Missile | 2 | 0.95 | 0.95 | |
| WMD Lab or Plant | 2 | -- | 0.99 | 11 | Ground Force Operation | 1 | 0.95 | 0.99 | | | | | | |
| Regime Official | 50 | 5 | 0.65 | 14 | SOF Mission | 1 | 0.75 | 0.99 | | | | | | Total includes 25 NMPs set aside as TSTs |
| Residence or Bunker | 50 | 5 | 0.8 | 11 | Ground Force Operation | 1 | 0.95 | 0.99 | 8 | Fixed Wing Killbox / CAS | 2 | 0.85 | 0.9 | Total includes 25 NMPs set aside as TSTs |
| Political Party Hqtrs | 1 | -- | 0.8 | 11 | Ground Force Operation | 1 | 0.95 | 0.99 | 8 | Fixed Wing Killbox / CAS | 2 | 0.85 | 0.9 | |
| Local Party Office | 5 | -- | 0.8 | 11 | Ground Force Operation | 1 | 0.95 | 0.99 | 8 | Fixed Wing Killbox / CAS | 2 | 0.85 | 0.9 | |
| National Financial Nt | 1 | -- | 0.85 | 21 | Legal Proceedings | 1 | 0.65 | 0.99 | | | | | | |
| Paramilitary Cell | 20 | -- | 0.8 | 11 | Ground Force Operation | 1 | 0.95 | 0.99 | 8 | Fixed Wing Killbox / CAS | 2 | 0.85 | 0.9 | Total includes 10 NMPs set aside as TSTs |
| Division Commande | 2 | -- | 0.99 | 14 | SOF Mission | 1 | 0.95 | 0.99 | | | | | | 2 Divisions assumed to capitulate |
| Vehicle Assembly Area | 2 | -- | 0.99 | 11 | Ground Force | 1 | 0.9 | 0.99 | | | | | | |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Operation | | | | | | | | | |
| Local Area Troops | 4 | -- | 0.99 | 11 | Ground Force Operation | 1 | 0.9 | 0.99 | | | | | | |
| Paramilitary Cell | 2 | -- | 0.8 | 11 | Ground Force Operation | 1 | 0.95 | 0.99 | 8 | Fixed Wing Killbox / CAS | 2 | 0.85 | 0.9 | |
| Paramilitary Vehicle Group | 4 | -- | 0.8 | 11 | Ground Force Operation | 1 | 0.95 | 0.99 | 8 | Fixed Wing Killbox / CAS | 2 | 0.85 | 0.9 | |
| Division Leaders | 15 | 3 | 0.65 | 14 | SOF Mission | 1 | 0.75 | 0.99 | | | | | | |
| Combat Vehicle Group | 24 | 4 | 0.8 | 8 | Fixed Wing Killbox / CAS | 16 | 0.85 | 0.9 | 11 | Ground Force Operation | 8 | 0.95 | 0.99 | |
| Support Vehicle Group | 48 | 8 | 0.8 | 8 | Fixed Wing Killbox / CAS | 16 | 0.85 | 0.9 | 11 | Ground Force Operation | 8 | 0.95 | 0.99 | (2 Divisions = 40 Battalions) x 60% = 24 mission packages |
| Combat Company | 72 | 12 | 0.8 | 8 | Fixed Wing Killbox / CAS | 2 | 0.85 | 0.9 | 11 | Ground Force Operation | 1 | 0.95 | 0.99 | 120 Companies x 60% = 72 mission packages |
| Oilfield, Mine or Crop Field | 13 | -- | 0.99 | 11 | Ground Force Operation | 1 | 0.9 | 0.99 | | | | | | |
| Pipeline or Trans Facity | 20 | -- | 0.99 | 11 | Ground Force Operation | 1 | 0.9 | 0.99 | | | | | | |
| Local Technician Group | 10 | -- | 0.99 | 11 | Ground Force Operation | 1 | 0.9 | 0.99 | | | | | | |
| Paramilitary Cell | 8 | -- | 0.8 | 8 | Fixed Wing Killbox / CAS | 2 | 0.85 | 0.9 | | | | | | |
| Paramilitary Vehicle Group | 5 | -- | 0.8 | 8 | Fixed Wing Killbox / CAS | 2 | 0.85 | 0.9 | | | | | | |
| Key Cleric or Religious Ldr | 2 | -- | 0.85 | 14 | SOF Mission | 1 | 0.75 | 0.99 | | | | | | |
| Clan Chief / Warlord | 15 | -- | 0.99 | 27 | Information Campaign (Mil) | 2 | 0.9 | 0.8 | | | | | | |
| Local Route Neighbohood | 4 | -- | 0.99 | 27 | Information Campaign (Mil) | 2 | 0.9 | 0.8 | | | | | | |
| Relief Supply Load | 8 | 2 | 0.99 | 24 | Humanitarian Relief (Mil) | 1 | 0.99 | 0.99 | | | | | | 20 Tons/Mission x 8 Missions = 160 Tons |
| Distribution Site | 4 | -- | 0.99 | 29 | Civil Engineering Proj (Mil) | 1 | 0.99 | 0.99 | | | | | | |
| Paramilitary Cell | 5 | -- | 0.8 | 8 | Fixed Wing Killbox / CAS | 2 | 0.85 | 0.9 | | | | | | |
| Paramilitary Vehicle Group | 2 | -- | 0.8 | 8 | Fixed Wing Killbox / CAS | 2 | 0.85 | 0.9 | | | | | | |
| Paramilitary Cell | 2 | -- | 0.8 | 8 | Fixed Wing Killbox / CAS | 2 | 0.85 | 0.9 | | | | | | |
| Paramilitary VehicleGroup | 2 | -- | 0.8 | 8 | Fixed Wing Killbox / CAS | 2 | 0.85 | 0.9 | | | | | | |
| Training Facility | 10 | -- | 0.8 | 8 | Fixed Wing Killbox / CAS | 2 | 0.85 | 0.9 | | | | | | |
| Bunker Complex | 25 | -- | 0.8 | 8 | Fixed Wing Killbox / CAS | 2 | 0.85 | 0.9 | | | | | | **Total includes 20 NMPs set aside as TSTs** |
| Terrorist Cell | 3 | -- | 0.7 | 11 | Ground Force Operation | 1 | 0.95 | 0.99 | 8 | Fixed Wing Killbox / CAS | 2 | 0.85 | 0.9 | |
| Terrorist Cell | 3 | -- | 0.7 | 11 | Ground Force Operation | 1 | 0.95 | 0.99 | 8 | Fixed Wing Killbox / CAS | 2 | 0.85 | 0.9 | |
| Criminal Cell | 5 | -- | 0.65 | 14 | SOF Mission | 1 | 0.75 | 0.99 | | | | | | |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Convoy Overwatch Route | 10 | 2 | 0.8 | 11 | Ground Force Operation | 1 | 0.95 | 0.99 | | | | | | |
| Paramilitary Cell | 3 | 1 | 0.8 | 11 | Ground Force Operation | 1 | 0.95 | 0.99 | 8 | Fixed Wing Killbox / CAS | 2 | 0.85 | 0.9 | |
| Paramilitary Vehicle Group | 3 | 1 | 0.8 | 11 | Ground Force Operation | 1 | 0.95 | 0.99 | 8 | Fixed Wing Killbox / CAS | 2 | 0.85 | 0.9 | |
| Terrorist Cells | 4 | 1 | 0.8 | 11 | Ground Force Operation | 1 | 0.95 | 0.99 | 8 | Fixed Wing Killbox / CAS | 2 | 0.85 | 0.9 | |
| Assembly Area Perimeter | 15 | 2 | 0.8 | 11 | Ground Force Operation | 1 | 0.95 | 0.99 | | | | | | |
| Paramilitary Cell | 1 | -- | 0.8 | 11 | Ground Force Operation | 1 | 0.95 | 0.99 | 8 | Fixed Wing Killbox / CAS | 2 | 0.85 | 0.9 | |
| Paramilitary Vehicle Group | 1 | -- | 0.8 | 11 | Ground Force Operation | 1 | 0.95 | 0.99 | 8 | Fixed Wing Killbox / CAS | 2 | 0.85 | 0.9 | |
| Terrorist Cell | 1 | -- | 0.8 | 11 | Ground Force Operation | 1 | 0.95 | 0.99 | 8 | Fixed Wing Killbox / CAS | 2 | 0.85 | 0.9 | |

## STABILITY AND RECONSTRUCTION (PART 1 OF 2)

| NCA Index | NCA Objective | SES Index | SES Value | Strategic Endstate | CoG Index | CoG Value | Center of Gravity | FE Index | PMESII Functional Element | Effect Class | Operational Effect | NMP Class Index | % Contrib | Individual NMP Index | Node Mission Package |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Defeat Violent Spoilers | 1 | 80 | Isolate / Defeat Spoilers | 1 | 15 | Neighborhood Intelligence | 1 | Ethnic Leader Cooperation | 9 | Contact | 1 | 100% | 1-30 | Local Community Leader |
| | | | | | | | | 2 | Media Outlets | 14 | Promote Image | 2 | 100% | 31-60 | TV/Radio/Newspaper Office |
| | | | | | 2 | 20 | Operating Spoiler cells | 3 | Terrorist Leadership | 11 | Capture | 3 | 100% | 61-95 | Terrorist Cell Leader |
| | | | | | | | | 4 | Terrorist Cells | 1 | Destroy | 4 | 100% | 96-100 | Terrorist Cell |
| | | | | | | | | 5 | Terrorist Weapons Cache | 1 | Destroy | 5 | 100% | 101-250 | Weapons Cache |
| | | | | | | | | 6 | Terrorist Support Networks | 2 | Neutralize | 6 | 100% | 251-255 | Support Network |
| | | | | | 3 | 10 | Insurgency Attack Sites | 7 | IED Consequence Mgmt | 4 | Restore | 7 | 80% | 256-755 | Medical Injury Site |
| | | | | | | | | | | 4 | Restore | 8 | 20% | 756-1255 | Facility Damage Site |
| | | | | | | | | 8 | Civil Population Support | 6 | Compliance | 9 | 100% | 1256-1325 | Local Neighborhood |
| | | | | | | | | 9 | Media Outlets | 14 | Promote Image | 10 | 100% | 1326-1355 | TV/Radio/Newspaper Office |
| 2 | Co-opt Nonviolent Spoilers | 2 | 50 | Restrain Disruption Agents | 4 | 10 | Ethnic Communication | 10 | Community Leader Dialog | 9 | Contact | 11 | 100% | 1356-1505 | Local Community Leader |
| | | | | | | | | 11 | Media Outlets | 14 | Promote Image | 12 | 100% | 1506-1535 | TV/Radio/Newspaper Office |
| | | | | | 5 | 15 | Spoiler Organizations | 12 | Spoiler Org Leadership | 9 | Contact | 13 | 100% | 1536-1565 | Spoiler Org Leader |
| | | | | | | | | 13 | Spoiler Org Agents | 6 | Compliance | 14 | 100% | 1566-1625 | Local Spoiler Org Cell |
| | | | | | | | | 14 | Spoiler Org Followers | 6 | Compliance | 15 | 100% | 1626-1686 | Local Neighborhood Areas |
| | | | | | | | | 15 | Media Outlets | 14 | Promote Image | 16 | 100% | 1687-1715 | TV/Radio/Newspaper Office |
| | | | | | 6 | 10 | Major Disruption Sites | 16 | Protest Consequence Mgmt | 4 | Restore | 17 | 80% | 1716-1740 | Medical Injury Site |
| | | | | | | | | | | 4 | Restore | 18 | 20% | 1741-1765 | Facility Damage Site |
| | | | | | | | | 17 | Civil Population Support | 6 | Compliance | 19 | 100% | 1766-1790 | Local Neighborhood |
| | | | | | | | | 18 | Media Outlets | 14 | Promote Image | 20 | 100% | 1791-1820 | TV/Radio/Newspaper Office |
| 3 | Estab Next State Conditions | 3 | 70 | Civil Law and Order | 7 | 10 | Civil Administration | 19 | Civil Admin Functions | 4 | Restore | 21 | 70% | 1821-1870 | Local Admin Office |
| | | | | | | | | | | | | 22 | 30% | 1871-1920 | Admin Official Vetting |
| | | | | | | | | 20 | National/Local Elections | 3 | Protect | 23 | 100% | 1921-1936 | Election Event |
| | | | | | | | | 21 | Media Outlets | 14 | Promote Image | 24 | 100% | 1937-1966 | TV/Radio/Newspaper Office |
| | | | | | | | | 22 | Admin Office Security | 3 | Protect | 25 | 100% | 1967-2016 | Area Security Site |
| | | | | | 8 | 20 | National Police Force | 23 | Recruit Police Personnel | 4 | Restore | 26 | 100% | 2017-2031 | Recruitment Program |
| | | | | | | | | 24 | Police Training Program | 15 | Deploy | 27 | 50% | 2032-2046 | Police Training Facility |
| | | | | | | | | | | | | 28 | 50% | 2047-2061 | Training Program Delivery |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | 25 | Media Outlets | 14 | Promote Image | 29 | 100% | 2062-2091 | TV/Radio/Newspaper Office |
| | | 4 | 60 | Public Infrastructure | 9 | 15 | Electricity / Water / Sewage | 26 | Electric Power Networks | 4 | Restore | 30 | 100% | 2092-2103 | Electric Power Facility |
| | | | | | | | | 27 | Water / Sewage Treatment | 4 | Restore | 31 | 100% | 2104-2125 | Water / Sewer Facility |
| | | | | | | | | 28 | Media Outlets | 14 | Promote Image | 32 | 100% | 2126-2155 | TV/Radio/Newspaper Office |
| | | | | | | | | 29 | Utility Systems Security | 3 | Protect | 33 | 100% | 2156-2189 | Area Security Site |
| | | | | | 10 | 15 | Information Networks | 30 | Telephone / Internet Grid | 4 | Restore | 34 | 100% | 2190-2204 | Communications Facility |
| | | | | | | | | 31 | Broadcast Media Centers | 4 | Restore | 35 | 100% | 2205-2234 | Media Center Facility |
| | | | | | | | | 32 | Media Outlets | 14 | Promote Image | 36 | 100% | 2235-2264 | TV/Radio/Newspaper Office |
| | | | | | | | | 33 | Communications Security | 3 | Protect | 37 | 100% | 2265-2279 | Area Security Site |
| | | | | | 11 | 10 | Public Education | 34 | Local School Facilities | 4 | Restore | 38 | 100% | 2280-2324 | School Building |
| | | | | | | | | 35 | Media Outlets | 14 | Promote Image | 39 | 100% | 2325-2354 | TV/Radio/Newspaper Office |
| | | | | | 12 | 10 | Transportation Networks | 36 | Key Bridges | 4 | Restore | 40 | 100% | 2355-2364 | Bridge |
| | | | | | | | | 37 | Key Roadways | 4 | Restore | 41 | 100% | 2365-2366 | Roadway |
| | | | | | | | | 38 | Key Rail Lines | 4 | Restore | 42 | 100% | 2367-2371 | Rail Line |
| | | | | | | | | 39 | Media Outlets | 14 | Promote Image | 43 | 100% | 2372-2401 | TV/Radio/Newspaper Office |
| | | | | | | | | 40 | Transport System Security | 3 | Protect | 44 | 100% | 2402-2405 | Area Security Site |
| | | 5 | 50 | Public Health Services | 13 | 15 | Public Health Systems | 41 | Hospitals / Clinics | 4 | Restore | 45 | 100% | 2406-2413 | Hospital or Clinic |
| | | | | | | | | 42 | Medical Stockpiles | 15 | Deploy | 46 | 100% | 2414-2418 | Medical Supply Load |
| | | | | | | | | 43 | Media Outlets | 14 | Promote Image | 47 | 100% | 2419-2448 | TV/Radio/Newspaper Office |
| | | 6 | 80 | Internal Security Forces | 14 | 20 | National Military Forces | 44 | Key Military Leadership | 9 | Contact | 48 | 100% | 2449-2558 | Military Officer Vetting |
| | | | | | | | | 45 | NCO / Enlisted Personnel | 4 | Restore | 49 | 100% | 2559-2566 | NCO / Enlisted Vetting |
| | | | | | | | | 46 | Military Training Program | 15 | Deploy | 50 | 50% | 2567 | Military Training Facility |
| | | | | | | | | | | | | 51 | 50% | 2568-2575 | Training Program Delivery |
| | | | | | | | | 47 | Military Equipment | 15 | Deploy | 52 | 60% | 2576-2655 | Combat Vehicle Group |
| | | | | | | | | | | | | 53 | 40% | 2656-2680 | Soldier Equipment Group |
| | | | | | | | | 48 | Media Outlets | 14 | Promote Image | 54 | 100% | 2681-2710 | TV/Radio/Newspaper Office |
| 4 | International Support | 7 | 50 | Economic Development Aid | 15 | 10 | Key Economic Sectors | 49 | Economic Aid Agreements | 10 | Sign Agreement | 55 | 100% | 2711-2718 | Aid / Monetary Agreement |
| | | | | | | | | 50 | Econ Development Projects | 9 | Contact | 56 | 100% | 2719-2753 | Project Coordination |
| | | | | | | | | 51 | Contractor Protection | 3 | Protect | 57 | 100% | 2754-2788 | Area Security Site |
| | | | | | | | | 52 | Media Outlets | 14 | Promote Image | 58 | 100% | 2789-2818 | TV/Radio/Newspaper Office |
| | | 8 | 50 | PVO/NGO | 16 | 10 | PVO/NGO | 53 | PVO/NGO Projects | 9 | Contact | 59 | 100% | 2819-2853 | Project Coordination |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Synchronization | | | Organizations | 54 | PVO/NGO Protection | 3 | Protect | 60 | 100% | 2854-2888 | Area Security Site |
| | | | | | | | | 55 | Media Outlets | 14 | Promote Image | 61 | 100% | 2889-2918 | TV/Radio/Newspaper Office |

## STABILITY AND RECONSTRUCTION (PART 2 OF 2)

| Node Mission Package | # of NMPs | NMP Rate | Prob of Intel Update | Action Class | Primary Action Class | Sorties /NMP | Prob Success | Prob Feedback | Action Class | Secondary Action Class | Sorties /NMP | Prob Success | Prob Feedback | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Local Community Leader | 30 | 0.2 | 0.8 | 13 | Stability & Security Op | 1 | 0.9 | 0.99 | | | | | | 30 leaders contacted to gain intelligence |
| TV/Radio/NewspaperOffice | 30 | 0.2 | 0.99 | 27 | Information Campaign (Mil) | 1 | 0.7 | 0.7 | | | | | | |
| Terrorist Cell Leader | 35 | 0.2 | 0.8 | 11 | Ground Force Operation | 1 | 0.8 | 0.99 | 13 | Stability & Security Op | 1 | 0.8 | 0.99 | 35 terrorist leaders captures to gain intelligence |
| Terrorist Cell | 5 | 0.1 | 0.8 | 11 | Ground Force Operation | 1 | 0.8 | 0.99 | 13 | Stability & Security Op | 1 | 0.8 | 0.99 | 5 major terrorist cells broken up |
| Weapons Cache | 150 | 1 | 0.8 | 11 | Ground Force Operation | 1 | 0.8 | 0.99 | 13 | Stability & Security Op | 1 | 0.8 | 0.99 | |
| Support Network | 5 | 0.1 | 0.8 | 11 | Ground Force Operation | 1 | 0.8 | 0.99 | 13 | Stability & Security Op | 1 | 0.8 | 0.99 | |
| Medical Injury Site | 500 | -- | 0.99 | 22 | Civ Medical Mission (Mil) | 1 | 0.95 | 0.99 | 23 | Civ Medical Mission (UN) | 1 | 0.95 | 0.99 | **Total includes 500 NMPs set aside as TSTs** |
| Facility Damage Site | 500 | -- | 0.99 | 31 | Pub Utility Restore (Cont) | 1 | 0.95 | 0.99 | 29 | Civil Engineering Proj (Mil) | 1 | 0.99 | 0.99 | **Total includes 500 NMPs set aside as TSTs** |
| Local Neighborhood | 70 | 0.25 | 0.99 | 27 | Information Campaign (Mil) | 1 | 0.7 | 0.7 | 28 | Info Campaign (USAID) | 1 | 0.7 | 0.7 | |
| TV/Radio/Newspape Office | 30 | 0.2 | 0.99 | 27 | Information Campaign (Mil) | 1 | 0.7 | 0.7 | | | | | | |
| Local Community Leader | 150 | 1 | 0.99 | 1 | Diplomatic Initiative | 1 | 0.8 | 0.99 | | | | | | 150 leaders contacted to co-opt support for coalition |
| TV/Radio/Newspape Office | 30 | 0.2 | 0.99 | 27 | Information Campaign (Mil) | 1 | 0.7 | 0.7 | | | | | | |
| Spoiler Org Leader | 30 | 0.2 | 0.8 | 1 | Diplomatic Initiative | 1 | 0.8 | 0.99 | | | | | | 15 non-violent spoiler organizations x 2 leaders/organization |
| Local Spoiler Org Cel | 60 | 0.25 | 0.8 | 13 | Stability & Security Op | 1 | 0.9 | 0.99 | | | | | | 15 non-violent spoiler organizations operating x 4 cells/organization |
| Local NeighborhoodAreas | 60 | 0.25 | 0.99 | 27 | Information Campaign (Mil) | 1 | 0.7 | 0.7 | 28 | Info Campaign (USAID) | 1 | 0.7 | 0.7 | |
| TV/Radio/Newspape Office | 30 | 0.2 | 0.99 | 27 | Information Campaign (Mil) | 1 | 0.7 | 0.7 | | | | | | |
| Medical Injury Site | 25 | -- | 0.99 | 22 | Civ Medical Mission (Mil) | 1 | 0.95 | 0.99 | 23 | Civ Medical Mission (UN) | 1 | 0.95 | 0.99 | **Total includes 25 NMPs set aside as TSTs** |
| Facility Damage Site | 25 | -- | 0.99 | 31 | Pub Utility Restore (Cont) | 1 | 0.95 | 0.99 | 29 | Civil Engineering Proj (Mil) | 1 | 0.99 | 0.99 | **Total includes 25 NMPs set aside as TSTs** |
| Local Neighborhood | 25 | -- | 0.99 | 27 | Information Campaign (Mil) | 1 | 0.7 | 0.7 | 28 | Info Campaign (USAID) | 1 | 0.7 | 0.7 | |
| TV/Radio/Newspape Office | 30 | 0.2 | 0.99 | 27 | Information Campaign (Mil) | 1 | 0.7 | 0.7 | | | | | | |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Local Admin Office | 50 | 1 | 0.99 | 33 | Civil Govt Function (State) | 1 | 0.95 | 0.99 | 32 | Civil Govt Function (Mil) | 1 | 0.95 | 0.99 | 50 provincial, city, town, or village officials |
| Admin Official Vetting | 50 | 1 | 0.99 | 33 | Civil Govt Function (State) | 1 | 0.95 | 0.99 | 32 | Civil Govt Function (Mil) | 1 | 0.95 | 0.99 | |
| Election Event | 16 | 0.2 | 0.99 | 13 | Stability & Security Op | 1 | 0.8 | 0.99 | | | | | | 1 national election + 15 local provincial elections |
| TV/Radio/NewspaperOffice | 30 | 0.2 | 0.99 | 28 | Info Campaign (USAID) | 1 | 0.7 | 0.7 | 27 | Information Campaign (Mil) | 1 | 0.7 | 0.7 | |
| Area Security Site | 50 | 0.25 | 0.99 | 13 | Stability & Security Op | 1 | 0.9 | 0.99 | | | | | | |
| Recruitment Program | 15 | 0.1 | 0.99 | 34 | Military/Police Training | 1 | 0.6 | 0.8 | | | | | | 1 police program in each of 15 provinces |
| Police Training Facilit | 15 | 0.1 | 0.99 | 29 | Civil Engineering Proj (Mil) | 1 | 0.99 | 0.99 | | | | | | 1 police program in each of 15 provinces |
| Training Program Delvery | 15 | 0.1 | 0.99 | 34 | Military/Police Training | 1 | 0.6 | 0.8 | | | | | | 1 police program in each of 15 provinces |
| TV/Radio/NewspaperOffice | 30 | 0.2 | 0.99 | 28 | Info Campaign (USAID) | 1 | 0.7 | 0.7 | 27 | Information Campaign (Mil) | 1 | 0.7 | 0.7 | |
| Electric Power Facilit | 12 | 0.1 | 0.99 | 31 | Pub Utility Restore (Cont) | 1 | 0.95 | 0.99 | 30 | Pub Utility Restore (Mil) | 1 | 0.95 | 0.99 | |
| Water / Sewer Facilit | 22 | 0.1 | 0.99 | 31 | Pub Utility Restore (Cont) | 1 | 0.95 | 0.99 | 30 | Pub Utility Restore (Mil) | 1 | 0.95 | 0.99 | |
| TV/Radio/NewspaperOffice | 30 | 0.2 | 0.99 | 28 | Info Campaign (USAID) | 1 | 0.7 | 0.7 | | | | | | |
| Area Security Site | 34 | 0.2 | 0.99 | 13 | Stability & Security Op | 1 | 0.9 | 0.99 | 35 | Contractor Security | 1 | 0.9 | 0.99 | |
| Communications Facity | 15 | 0.1 | 0.99 | 31 | Pub Utility Restore (Cont) | 1 | 0.95 | 0.99 | 30 | Pub Utility Restore (Mil) | 1 | 0.95 | 0.99 | 1 site in each of 15 provinces |
| Media Center Facility | 30 | 1 | 0.99 | 31 | Pub Utility Restore (Cont) | 1 | 0.95 | 0.99 | 30 | Pub Utility Restore (Mil) | 1 | 0.95 | 0.99 | |
| TV/Radio/NewspaperOffice | 30 | 0.2 | 0.99 | 28 | Info Campaign (USAID) | 1 | 0.7 | 0.7 | | | | | | |
| Area Security Site | 15 | 0.2 | 0.99 | 13 | Stability & Security Op | 1 | 0.9 | 0.99 | | | | | | |
| School Building | 45 | 0.2 | 0.99 | 31 | Pub Utility Restore (Cont) | 1 | 0.95 | 0.99 | 30 | Pub Utility Restore (Mil) | 1 | 0.95 | 0.99 | |
| TV/Radio/Newspape Office | 30 | 0.2 | 0.99 | 28 | Info Campaign (USAID) | 1 | 0.7 | 0.7 | | | | | | |
| Bridge | 10 | 0.1 | 0.99 | 31 | Pub Utility Restore (Cont) | 1 | 0.95 | 0.99 | 29 | Civil Engineering Proj (Mil) | 1 | 0.99 | 0.99 | |
| Roadway | 2 | 0.1 | 0.99 | 31 | Pub Utility Restore (Cont) | 1 | 0.95 | 0.99 | 29 | Civil Engineering Proj (Mil) | 1 | 0.99 | 0.99 | |
| Rail Line | 5 | 0.1 | 0.99 | 31 | Pub Utility Restore (Cont) | 1 | 0.95 | 0.99 | 29 | Civil Engineering Proj (Mil) | 1 | 0.99 | 0.99 | |
| TV/Radio/Newspape Office | 30 | 0.2 | 0.99 | 28 | Info Campaign (USAID) | 1 | 0.7 | 0.7 | | | | | | |
| Area Security Site | 4 | 0.1 | 0.99 | 13 | Stability & Security Op | 1 | 0.9 | 0.99 | 35 | Contractor Security | 1 | 0.9 | 0.99 | |
| Hospital or Clinic | 8 | 0.2 | 0.99 | 31 | Pub Utility Restore (Cont) | 1 | 0.95 | 0.99 | | | | | | |
| Medical Supply Loac | 5 | 0.1 | 0.99 | 24 | Humanitarian Relief (Mil) | 1 | 0.99 | 0.99 | | | | | | 10 tons/mission x 5 missions |
| TV/Radio/Newspape Office | 30 | 0.2 | 0.99 | 28 | Info Campaign (USAID) | 1 | 0.7 | 0.7 | | | | | | |
| Military Officer Vettirg | 110 | 5 | 0.99 | 34 | Military/Police Training | 1 | 0.95 | 0.99 | | | | | | |
| NCO / Enlisted Vettig | 8 | 0.1 | 0.99 | 34 | Military/Police Training | 1 | 0.6 | 0.8 | | | | | | Soldiers recruited in blocks of 500 x 8 groups |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Military Training Facility | 1 | -- | 0.99 | 29 | Civil Engineering Proj (Mil) | 1 | 0.99 | 0.99 | | | | | | |
| Training Program Delivery | 8 | 0.05 | 0.99 | 34 | Military/Police Training | 1 | 0.6 | 0.8 | | | | | | Soldiers trained in blocks of 500 x 8 groups |
| Combat Vehicle Group | 80 | 0.5 | 0.99 | 20 | Economic Grants (USAID) | 1 | 0.95 | 0.99 | | | | | | 200 vehicles delivered/group x 80 groups |
| Soldier Equipment Group | 25 | 0.5 | 0.99 | 20 | Economic Grants (USAID) | 1 | 0.95 | 0.99 | | | | | | 20 tons/mission x 25 missions |
| TV/Radio/NewspaperOffice | 30 | 0.2 | 0.99 | 27 | Information Campaign (Mil) | 1 | 0.7 | 0.7 | | | | | | |
| Aid / Monetary Agreement | 8 | -- | 0.99 | 1 | Diplomatic Initiative | 1 | 0.8 | 0.99 | | | | | | |
| Project Coordination | 35 | 0.25 | 0.99 | 27 | Information Campaign (Mil) | 1 | 0.7 | 0.7 | | | | | | 35 corporations initiating industrial / agricultural projects |
| Area Security Site | 35 | 0.25 | 0.99 | 35 | Contractor Security | 1 | 0.9 | 0.99 | 13 | Stability & Security Op | 1 | 0.9 | 0.99 | |
| TV/Radio/NewspaperOffice | 30 | 0.2 | 0.99 | 28 | Info Campaign (USAID) | 1 | 0.7 | 0.7 | 27 | Information Campaign (Mil) | 1 | 0.7 | 0.7 | |
| Project Coordination | 35 | 0.25 | 0.99 | 27 | Information Campaign (Mil) | 1 | 0.7 | 0.7 | | | | | | 35 Private/Voluntary Orgs or Non-Govt Orgs initiating a projects |
| Area Security Site | 35 | 0.25 | 0.99 | 35 | Contractor Security | 1 | 0.9 | 0.99 | 13 | Stability & Security Op | 1 | 0.9 | 0.99 | |
| TV/Radio/NewspaperOffice | 30 | 0.2 | 0.99 | 28 | Info Campaign (USAID) | 1 | 0.7 | 0.7 | 27 | Information Campaign (Mil) | 1 | 0.7 | 0.7 | |

# APPENDIX B STAFF ACTOR KNOWLEDGE CHARACTERISTICS (BASELINE)

## TASK 1-3 IDENTIFY DESIRED STRATEGIC ENDSTATES

### Task Description

Task 1-3 begins the construction of focal knowledge within the simulated JTF planning rhythm. The task produces the first level of decomposition of the *NCA Objectives* into a set a desired *Strategic Endstates* for each phase of the operational campaign.

### Task Participation

Task 1-3 is led by the Joint Coordination Board (JCB) that is nominally comprised of the following primary actors:

- JTF Commander
- Ambassador
- Director, Joint Interagency Coordination Group.

The primary actors engage in an initial execution of Task 1-3. If the number of identified *Strategic Endstates* reaches the set threshold level specified in the model, the task is considered completed –otherwise, the task is re-executed after supporting the JCB with secondary actors. Secondary actors supporting the JCB include

- JTF Information Superiority Chief
- Information Superiority Officer
- Effects Assessment Supervisor
- Information Operations Supervisor
- JTF Plans Officer
- Political/Military Planner
- Red/Blue Planner
- JTF Operations Chief
- Fires/Targeting Officer
- JFACC Liaison
- JFLCC Liaison
- JFMCC Liaison
- JSOTF Liaison

### Area and Level of Staff Expertise

The following set of tables indicate the areas and levels of knowledge characterizing each of the actors listed as participating in Task 1-3.

JTF Commander

| | Political Endstates | Military Endstates | Economic Endstates | Social Endstates | Information Endstates | Infrastructure Endstates |
|---|---|---|---|---|---|---|
| Set Conditions | High (0.8-1.0) | High (0.8-1.0) | Medium (0.5-0.7) | Low (0.2-0.4) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Initial Forced Entry | High (0.8-1.0) | High (0.8-1.0) | Medium (0.5-0.7) | Low (0.2-0.4) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Decisive Operations | High (0.8-1.0) | High (0.8-1.0) | Medium (0.5-0.7) | Low (0.2-0.4) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Stability / Reconstruction | Medium (0.5-0.7) | High (0.8-1.0) | Medium (0.5-0.7) | Low (0.2-0.4) | Medium (0.5-0.7) | Medium (0.5-0.7) |

Ambassador

| | Political Endstates | Military Endstates | Economic Endstates | Social Endstates | Information Endstates | Infrastructure Endstates |
|---|---|---|---|---|---|---|
| Set Conditions | High (0.8-1.0) | Nil (0.0) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Initial Forced Entry | High (0.8-1.0) | Nil (0.0) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Decisive Operations | High (0.8-1.0) | Nil (0.0) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Stability / Reconstruction | High (0.8-1.0) | Nil (0.0) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) |

Director, Joint Interagency Coordination Group

| | Political Endstates | Military Endstates | Economic Endstates | Social Endstates | Information Endstates | Infrastructure Endstates |
|---|---|---|---|---|---|---|
| Set Conditions | Medium (0.5-0.7) | Nil (0.0) | High (0.8-1.0) | High (0.8-1.0) | High (0.8-1.0) | High (0.8-1.0) |
| Initial Forced Entry | Medium (0.5-0.7) | Nil (0.0) | High (0.8-1.0) | High (0.8-1.0) | High (0.8-1.0) | High (0.8-1.0) |
| Decisive Operations | Medium (0.5-0.7) | Nil (0.0) | High (0.8-1.0) | High (0.8-1.0) | High (0.8-1.0) | High (0.8-1.0) |
| Stability / Reconstruction | Medium (0.5-0.7) | Nil (0.0) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | High (0.8-1.0) |

## JTF Information Superiority Chief

| | Political Endstates | Military Endstates | Economic Endstates | Social Endstates | Information Endstates | Infrastructure Endstates |
|---|---|---|---|---|---|---|
| Set Conditions | Medium (0.5-0.7) | Medium (0.5-0.7) | Nil (0.0) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Initial Forced Entry | Medium (0.5-0.7) | Medium (0.5-0.7) | Nil (0.0) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Decisive Operaions | Medium (0.5-0.7) | Medium (0.5-0.7) | Nil (0.0) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Stability / Recoıstruction | Medium (0.5-0.7) | Medium (0.5-0.7) | Nil (0.0) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) |

## Information Superiority Officer

| | Political Endstates | Military Endstates | Economic Endstates | Social Endstates | Information Endstates | Infrastructure Endstates |
|---|---|---|---|---|---|---|
| Set Conditions | Low (0.2-0.4) | Medium (0.5-0.7) | Nil (0.0) | Low (0.2-0.4) | High (0.8-1.0) | Nil (0.0) |
| Initial Forced Entry | Low (0.2-0.4) | Medium (0.5-0.7) | Nil (0.0) | Low (0.2-0.4) | High (0.8-1.0) | Nil (0.0) |
| Decisive Operaions | Low (0.2-0.4) | Medium (0.5-0.7) | Nil (0.0) | Low (0.2-0.4) | High (0.8-1.0) | Nil (0.0) |
| Stability / Recoıstruction | Low (0.2-0.4) | Medium (0.5-0.7) | Nil (0.0) | Low (0.2-0.4) | High (0.8-1.0) | Nil (0.0) |

## Effects Assessment Supervisor

| | Political Endstates | Military Endstates | Economic Endstates | Social Endstates | Information Endstates | Infrastructure Endstates |
|---|---|---|---|---|---|---|
| Set Conditions | Medium (0.5-0.7) | Medium (0.5-0.7) | High (0.8-1.0) | High (0.8-1.0) | High (0.8-1.0) | Medium (0.5-0.7) |
| Initial Forced Entry | Medium (0.5-0.7) | Medium (0.5-0.7) | High (0.8-1.0) | High (0.8-1.0) | High (0.8-1.0) | Medium (0.5-0.7) |
| Decisive Operaions | Medium (0.5-0.7) | Medium (0.5-0.7) | High (0.8-1.0) | High (0.8-1.0) | High (0.8-1.0) | Medium (0.5-0.7) |
| Stability / Recoıstruction | Medium (0.5-0.7) | Medium (0.5-0.7) | High (0.8-1.0) | High (0.8-1.0) | High (0.8-1.0) | Medium (0.5-0.7) |

## Information Operations Supervisor

| | Political Endstates | Military Endstates | Economic Endstates | Social Endstates | Information Endstates | Infrastructure Endstates |
|---|---|---|---|---|---|---|
| Set Conditions | Low (0.2-0.4) | Low (0.2-0.4) | Nil (0.0) | Low (0.2-0.4) | High (0.8-1.0) | Nil (0.0) |
| Initial Forced Entry | Low (0.2-0.4) | Low (0.2-0.4) | Nil (0.0) | Low (0.2-0.4) | High (0.8-1.0) | Nil (0.0) |
| Decisive Operations | Low (0.2-0.4) | Low (0.2-0.4) | Nil (0.0) | Low (0.2-0.4) | High (0.8-1.0) | Nil (0.0) |
| Stability / Reconstruction | Low (0.2-0.4) | Low (0.2-0.4) | Nil (0.0) | Low (0.2-0.4) | High (0.8-1.0) | Nil (0.0) |

## JTF Plans Officer

| | Political Endstates | Military Endstates | Economic Endstates | Social Endstates | Information Endstates | Infrastructure Endstates |
|---|---|---|---|---|---|---|
| Set Conditions | Low (0.2-0.4) | Medium (0.5-0.7) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) |
| Initial Forced Entry | Low (0.2-0.4) | Medium (0.5-0.7) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) |
| Decisive Operations | Low (0.2-0.4) | Medium (0.5-0.7) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) |
| Stability / Reconstruction | Low (0.2-0.4) | Medium (0.5-0.7) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) |

## Political/Military Planner

| | Political Endstates | Military Endstates | Economic Endstates | Social Endstates | Information Endstates | Infrastructure Endstates |
|---|---|---|---|---|---|---|
| Set Conditions | High (0.8-1.0) | Medium (0.5-0.7) | Low (0.2-0.4) | High (0.8-1.0) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Initial Forced Entry | High (0.8-1.0) | Medium (0.5-0.7) | Low (0.2-0.4) | High (0.8-1.0) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Decisive Operations | High (0.8-1.0) | Medium (0.5-0.7) | Low (0.2-0.4) | High (0.8-1.0) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Stability / Reconstruction | High (0.8-1.0) | Medium (0.5-0.7) | Low (0.2-0.4) | High (0.8-1.0) | Medium (0.5-0.7) | Medium (0.5-0.7) |

Red/Blue Planner

| | Political Endstates | Military Endstates | Economic Endstates | Social Endstates | Information Endstates | Infrastructure Endstates |
|---|---|---|---|---|---|---|
| Set Conditions | Low (0.2-0.4) | High (0.8-1.0) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) |
| Initial Forced Entry | Low (0.2-0.4) | High (0.8-1.0) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) |
| Decisive Operaions | Low (0.2-0.4) | High (0.8-1.0) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) |
| Stability / Recoistruction | Low (0.2-0.4) | High (0.8-1.0) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) |

JTF Operations Chief

| | Political Endstates | Military Endstates | Economic Endstates | Social Endstates | Information Endstates | Infrastructure Endstates |
|---|---|---|---|---|---|---|
| Set Conditions | Low (0.2-0.4) | High (0.8-1.0) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) |
| Initial Forced Entry | Low (0.2-0.4) | High (0.8-1.0) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) |
| Decisive Operaions | Low (0.2-0.4) | High (0.8-1.0) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) |
| Stability / Recoistruction | Low (0.2-0.4) | High (0.8-1.0) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) |

Fires/Targeting Officer

| | Political Endstates | Military Endstates | Economic Endstates | Social Endstates | Information Endstates | Infrastructure Endstates |
|---|---|---|---|---|---|---|
| Set Conditions | Nil (0.0) | High (0.8-1.0) | Nil (0.0) | Nil (0.0) | Medium (0.5-0.7) | Nil (0.0) |
| Initial Forced Entry | Nil (0.0) | High (0.8-1.0) | Nil (0.0) | Nil (0.0) | Medium (0.5-0.7) | Nil (0.0) |
| Decisive Operaions | Nil (0.0) | High (0.8-1.0) | Nil (0.0) | Nil (0.0) | Medium (0.5-0.7) | Nil (0.0) |
| Stability / Recoistruction | Nil (0.0) | High (0.8-1.0) | Nil (0.0) | Nil (0.0) | Medium (0.5-0.7) | Nil (0.0) |

JFACC Liaison

| | Political Endstates | Military Endstates | Economic Endstates | Social Endstates | Information Endstates | Infrastructure Endstates |
|---|---|---|---|---|---|---|
| Set Conditions | Low (0.2-0.4) | High (0.8-1.0) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) |
| Initial Forced Entry | Low (0.2-0.4) | High (0.8-1.0) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) |
| Decisive Operations | Low (0.2-0.4) | Medium (0.5-0.7) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) |
| Stability / Reconstruction | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) |

JFLCC Liaison

| | Political Endstates | Military Endstates | Economic Endstates | Social Endstates | Information Endstates | Infrastructure Endstates |
|---|---|---|---|---|---|---|
| Set Conditions | Low (0.2-0.4) | Medium (0.5-0.7) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) |
| Initial Forced Entry | Low (0.2-0.4) | High (0.8-1.0) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) |
| Decisive Operations | Low (0.2-0.4) | High (0.8-1.0) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) |
| Stability / Reconstruction | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) |

JFMCC Liaison

| | Political Endstates | Military Endstates | Economic Endstates | Social Endstates | Information Endstates | Infrastructure Endstates |
|---|---|---|---|---|---|---|
| Set Conditions | Low (0.2-0.4) | High (0.8-1.0) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) |
| Initial Forced Entry | Low (0.2-0.4) | High (0.8-1.0) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) |
| Decisive Operations | Low (0.2-0.4) | Medium (0.5-0.7) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) |
| Stability / Reconstruction | Low (0.2-0.4) | Medium (0.5-0.7) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) |

JSOTF Liaison

| | Political Endstates | Military Endstates | Economic Endstates | Social Endstates | Information Endstates | Infrastructure Endstates |
|---|---|---|---|---|---|---|
| Set Conditions | Medium (0.5-0.7) | High (0.8-1.0) | Low (0.2-0.4) | High (0.8-1.0) | Low (0.2-0.4) | Low (0.2-0.4) |
| Initial Forced Entry | Medium (0.5-0.7) | High (0.8-1.0) | Low (0.2-0.4) | Medium (0.5-0.7) | Low (0.2-0.4) | Low (0.2-0.4) |
| Decisive Operaions | Medium (0.5-0.7) | Medium (0.5-0.7) | Low (0.2-0.4) | Medium (0.5-0.7) | Low (0.2-0.4) | Low (0.2-0.4) |
| Stability / Reconstruction | Medium (0.5-0.7) | High (0.8-1.0) | Medium (0.5-0.7) | High (0.8-1.0) | Medium (0.5-0.7) | Medium (0.5-0.7) |

## TASK 1-4 IDENTIFY CENTERS OF GRAVITY

### Task Description

Task 1-4 continues the construction of focal knowledge within the simulated JTF planning rhythm. The task produces the second level of decomposition of the desired *Strategic Endstates* into a set of *Centers of Gravity* for each phase of the operational campaign.

### Task Participation

Task 1-4 is led by the core *Joint Planning Group* (JPG) that is nominally comprised of the following primary actors:

- JTF Commander
- Deputy JTF Commander
- Information Operations Officer
- JTF Plans Chief
- Ground (Army) Planner
- Ground (Marines) Planner)
- Air Planner
- Maritime Planner
- Special Operations Planner
- Political/Military Planner

The primary actors engage in an initial execution of Task 1-4. If the number of identified *Centers of Gravity* reaches the set threshold level specified in the model, the task is considered completed –otherwise, the task is re-executed after supporting the core JPG with secondary actors. Secondary actors supporting the core JPG include

- STO Planner
- Operations Law Planner
- Red/Blue Planner
- Force Protection Planner
- Deployment Planner

### Area and Level of Staff Expertise

The following set of tables indicate the areas and levels of knowledge characterizing each of the actors listed as participating in Task 1-4.

JTF Commander

| | Political CoGs | Military CoGs | Economic CoGs | Social CoGs | Information CoGs | Infrastructure CoGs |
|---|---|---|---|---|---|---|
| Set Conditions | High (0.8-1.0) | High (0.8-1.0) | Medium (0.5-0.7) | Low (0.2-0.4) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Initial Forced Entry | High (0.8-1.0) | High (0.8-1.0) | Medium (0.5-0.7) | Low (0.2-0.4) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Decisive Operations | High (0.8-1.0) | High (0.8-1.0) | Medium (0.5-0.7) | Low (0.2-0.4) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Stability / Reconstruction | Medium (0.5-0.7) | High (0.8-1.0) | Medium (0.5-0.7) | Low (0.2-0.4) | Medium (0.5-0.7) | Medium (0.5-0.7) |

Deputy JTF Commander

| | Political CoGs | Military CoGs | Economic CoGs | Social CoGs | Information CoGs | Infrastructure CoGs |
|---|---|---|---|---|---|---|
| Set Conditions | Medium (0.5-0.7) | High (0.8-1.0) | Medium (0.5-0.7) | Low (0.2-0.4) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Initial Forced Entry | Medium (0.5-0.7) | High (0.8-1.0) | Medium (0.5-0.7) | Low (0.2-0.4) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Decisive Operations | Medium (0.5-0.7) | High (0.8-1.0) | Medium (0.5-0.7) | Low (0.2-0.4) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Stability / Reconstruction | Medium (0.5-0.7) | High (0.8-1.0) | Medium (0.5-0.7) | Low (0.2-0.4) | Medium (0.5-0.7) | Medium (0.5-0.7) |

Information Operations Officer

| | Political CoGs | Military CoGs | Economic CoGs | Social CoGs | Information CoGs | Infrastructure CoGs |
|---|---|---|---|---|---|---|
| Set Conditions | Low (0.2-0.4) | Low (0.2-0.4) | Nil (0.0) | Low (0.2-0.4) | High (0.8-1.0) | Nil (0.0) |
| Initial Forced Entry | Low (0.2-0.4) | Low (0.2-0.4) | Nil (0.0) | Low (0.2-0.4) | High (0.8-1.0) | Nil (0.0) |
| Decisive Operations | Low (0.2-0.4) | Low (0.2-0.4) | Nil (0.0) | Low (0.2-0.4) | High (0.8-1.0) | Nil (0.0) |
| Stability / Reconstruction | Low (0.2-0.4) | Low (0.2-0.4) | Nil (0.0) | Low (0.2-0.4) | High (0.8-1.0) | Nil (0.0) |

JTF Plans Chief

| | Political CoGs | Military CoGs | Economic CoGs | Social CoGs | Information CoGs | Infrastructure CoGs |
|---|---|---|---|---|---|---|
| Set Conditions | Medium (0.5-0.7) | High (0.8-1.0) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Initial Forced Entry | Medium (0.5-0.7) | High (0.8-1.0) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Decisive Operations | Medium (0.5-0.7) | High (0.8-1.0) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Stability / Reconstruction | Medium (0.5-0.7) | High (0.8-1.0) | Medium (0.5-0.7) | Low (0.2-0.4) | Medium (0.5-0.7) | Medium (0.5-0.7) |

Ground (Army) Planner

| | Political CoGs | Military CoGs | Economic CoGs | Social CoGs | Information CoGs | Infrastructure CoGs |
|---|---|---|---|---|---|---|
| Set Conditions | Nil (0.0) | High (0.8-1.0) | Medium (0.5-0.7) | Medium (0.5-0.7) | High (0.8-1.0) | Medium (0.5-0.7) |
| Initial Forced Entry | Nil (0.0) | High (0.8-1.0) | Medium (0.5-0.7) | Medium (0.5-0.7) | High (0.8-1.0) | Medium (0.5-0.7) |
| Decisive Operations | Nil (0.0) | High (0.8-1.0) | Medium (0.5-0.7) | Medium (0.5-0.7) | High (0.8-1.0) | Medium (0.5-0.7) |
| Stability / Reconstruction | Nil (0.0) | High (0.8-1.0) | Medium (0.5-0.7) | Medium (0.5-0.7) | High (0.8-1.0) | Medium (0.5-0.7) |

Ground (Marines) Planner

| | Political CoGs | Military CoGs | Economic CoGs | Social CoGs | Information CoGs | Infrastructure CoGs |
|---|---|---|---|---|---|---|
| Set Conditions | Nil (0.0) | High (0.8-1.0) | Medium (0.5-0.7) | Medium (0.5-0.7) | High (0.8-1.0) | Medium (0.5-0.7) |
| Initial Forced Entry | Nil (0.0) | High (0.8-1.0) | Medium (0.5-0.7) | Medium (0.5-0.7) | High (0.8-1.0) | Medium (0.5-0.7) |
| Decisive Operations | Nil (0.0) | High (0.8-1.0) | Medium (0.5-0.7) | Medium (0.5-0.7) | High (0.8-1.0) | Medium (0.5-0.7) |
| Stability / Reconstruction | Nil (0.0) | High (0.8-1.0) | Medium (0.5-0.7) | Medium (0.5-0.7) | High (0.8-1.0) | Medium (0.5-0.7) |

Air Planner

| | Political CoGs | Military CoGs | Economic CoGs | Social CoGs | Information CoGs | Infrastructure CoGs |
|---|---|---|---|---|---|---|
| Set Conditions | Nil (0.0) | High (0.8-1.0) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Initial Forced Entry | Nil (0.0) | High (0.8-1.0) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Decisive Operaions | Nil (0.0) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Stability / Recoıstruction | Nil (0.0) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) |

Maritime Planner

| | Political CoGs | Military CoGs | Economic CoGs | Social CoGs | Information CoGs | Infrastructure CoGs |
|---|---|---|---|---|---|---|
| Set Conditions | Nil (0.0) | High (0.8-1.0) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Initial Forced Entry | Nil (0.0) | High (0.8-1.0) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Decisive Operaions | Nil (0.0) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Stability / Recoıstruction | Nil (0.0) | Medium (0.5-0.7) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) |

Special Operations Planner

| | Political CoGs | Military CoGs | Economic CoGs | Social CoGs | Information CoGs | Infrastructure CoGs |
|---|---|---|---|---|---|---|
| Set Conditions | Medium (0.5-0.7) | High (0.8-1.0) | Medium (0.5-0.7) | High (0.8-1.0) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Initial Forced Entry | Medium (0.5-0.7) | High (0.8-1.0) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Decisive Operaions | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Stability / Recoıstruction | High (0.8-1.0) | High (0.8-1.0) | Medium (0.5-0.7) | High (0.8-1.0) | High (0.8-1.0) | High (0.8-1.0) |

Political/Military Planner

| | Political CoGs | Military CoGs | Economic CoGs | Social CoGs | Information CoGs | Infrastructure CoGs |
|---|---|---|---|---|---|---|
| Set Conditions | High (0.8-1.0) | Medium (0.5-0.7) | Low (0.2-0.4) | High (0.8-1.0) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Initial Forced Entry | High (0.8-1.0) | Medium (0.5-0.7) | Low (0.2-0.4) | High (0.8-1.0) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Decisive Operations | High (0.8-1.0) | Medium (0.5-0.7) | Low (0.2-0.4) | High (0.8-1.0) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Stability / Reconstruction | High (0.8-1.0) | Medium (0.5-0.7) | Low (0.2-0.4) | High (0.8-1.0) | Medium (0.5-0.7) | Medium (0.5-0.7) |

STO Planner

| | Political CoGs | Military CoGs | Economic CoGs | Social CoGs | Information CoGs | Infrastructure CoGs |
|---|---|---|---|---|---|---|
| Set Conditions | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) |
| Initial Forced Entry | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) |
| Decisive Operations | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) |
| Stability / Reconstruction | High (0.8-1.0) | High (0.8-1.0) | High (0.8-1.0) | High (0.8-1.0) | High (0.8-1.0) | High (0.8-1.0) |

Operations Law Planner

| | Political CoGs | Military CoGs | Economic CoGs | Social CoGs | Information CoGs | Infrastructure CoGs |
|---|---|---|---|---|---|---|
| Set Conditions | Nil (0.0) | Medium (0.5-0.7) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) |
| Initial Forced Entry | Nil (0.0) | Medium (0.5-0.7) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) |
| Decisive Operations | Nil (0.0) | Medium (0.5-0.7) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) |
| Stability / Reconstruction | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) |

## Red/Blue Planner

| | Political CoGs | Military CoGs | Economic CoGs | Social CoGs | Information CoGs | Infrastructure CoGs |
|---|---|---|---|---|---|---|
| Set Conditions | Low (0.2-0.4) | High (0.8-1.0) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) |
| Initial Forced Entry | Low (0.2-0.4) | High (0.8-1.0) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) |
| Decisive Operations | Low (0.2-0.4) | High (0.8-1.0) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) |
| Stability / Reconstruction | Low (0.2-0.4) | High (0.8-1.0) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) |

## Force Protection Planner

| | Political CoGs | Military CoGs | Economic CoGs | Social CoGs | Information CoGs | Infrastructure CoGs |
|---|---|---|---|---|---|---|
| Set Conditions | Low (0.2-0.4) | High (0.8-1.0)* | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) | Medium (0.5-0.7)* |
| Initial Forced Entry | Low (0.2-0.4) | High (0.8-1.0)* | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) | Medium (0.5-0.7)* |
| Decisive Operations | Low (0.2-0.4) | High (0.8-1.0)* | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) | Medium (0.5-0.7)* |
| Stability / Reconstruction | Low (0.2-0.4) | High (0.8-1.0)* | Medium (0.5-0.7)* | Low (0.2-0.4) | Low (0.2-0.4) | Medium (0.5-0.7)* |

*Note: Expertise in the military area addresses only knowledge elements related to the protection of facilities

## Deployment Planner

| | Political CoGs | Military CoGs | Economic CoGs | Social CoGs | Information CoGs | Infrastructure CoGs |
|---|---|---|---|---|---|---|
| Set Conditions | Low (0.2-0.4) | High (0.8-1.0)* | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) |
| Initial Forced Entry | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) |
| Decisive Operations | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) |
| Stability / Reconstruction | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) |

*Note: Expertise in the military area addresses only knowledge elements related to the deployment of BLUE forces

## TASK 2-1 IDENTIFY PMESII FUNCTIONAL ELEMENTS

### Task Description

Task 2-1 continues the construction of focal knowledge within the simulated JTF planning rhythm. The task produces the third level of decomposition of the desired *Centers of Gravity* into a set of *PMESII Functional Elements* for each phase of the operational campaign.

### Task Participation

Task 2-1 is led by the core *Joint Planning Group* (JPG) that is nominally comprised of the following primary actors:

- JTF Commander
- Deputy JTF Commander
- Information Operations Officer
- JTF Plans Chief
- Ground (Army) Planner
- Ground (Marines) Planner)
- Air Planner
- Maritime Planner
- Special Operations Planner
- Political/Military Planner

The primary actors engage in an initial execution of Task 2-1. If the number of identified *PMESII Functional Elements* reaches the set threshold level specified in the model, the task is considered completed –otherwise, the task is re-executed after supporting the core JPG with secondary actors. Secondary actors supporting the core JPG include

- STO Planner
- Operations Law Planner
- Red/Blue Planner
- Force Protection Planner
- Deployment Planner

### Area and Level of Staff Expertise

The following set of tables indicate the areas and levels of knowledge characterizing each of the actors listed as participating in Task 2-1.

JTF Commander

| | Political FEs | Military FEs | Economic FEs | Social FEs | Information FEs | Infrastructure FEs |
|---|---|---|---|---|---|---|
| Set Conditions | High (0.8-1.0) | High (0.8-1.0) | Medium (0.5-0.7) | Low (0.2-0.4) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Initial Forced Entry | High (0.8-1.0) | High (0.8-1.0) | Medium (0.5-0.7) | Low (0.2-0.4) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Decisive Operations | High (0.8-1.0) | High (0.8-1.0) | Medium (0.5-0.7) | Low (0.2-0.4) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Stability / Reconstruction | Medium (0.5-0.7) | High (0.8-1.0) | Medium (0.5-0.7) | Low (0.2-0.4) | Medium (0.5-0.7) | Medium (0.5-0.7) |

Deputy JTF Commander

| | Political FEs | Military FEs | Economic FEs | Social FEs | Information FEs | Infrastructure FEs |
|---|---|---|---|---|---|---|
| Set Conditions | Medium (0.5-0.7) | High (0.8-1.0) | Medium (0.5-0.7) | Low (0.2-0.4) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Initial Forced Entry | Medium (0.5-0.7) | High (0.8-1.0) | Medium (0.5-0.7) | Low (0.2-0.4) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Decisive Operations | Medium (0.5-0.7) | High (0.8-1.0) | Medium (0.5-0.7) | Low (0.2-0.4) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Stability / Reconstruction | Medium (0.5-0.7) | High (0.8-1.0) | Medium (0.5-0.7) | Low (0.2-0.4) | Medium (0.5-0.7) | Medium (0.5-0.7) |

Information Operations Officer

| | Political FEs | Military FEs | Economic FEs | Social FEs | Information FEs | Infrastructure FEs |
|---|---|---|---|---|---|---|
| Set Conditions | Low (0.2-0.4) | Low (0.2-0.4) | Nil (0.0) | Low (0.2-0.4) | High (0.8-1.0) | Nil (0.0) |
| Initial Forced Entry | Low (0.2-0.4) | Low (0.2-0.4) | Nil (0.0) | Low (0.2-0.4) | High (0.8-1.0) | Nil (0.0) |
| Decisive Operations | Low (0.2-0.4) | Low (0.2-0.4) | Nil (0.0) | Low (0.2-0.4) | High (0.8-1.0) | Nil (0.0) |
| Stability / Reconstruction | Low (0.2-0.4) | Low (0.2-0.4) | Nil (0.0) | Low (0.2-0.4) | High (0.8-1.0) | Nil (0.0) |

JTF Plans Chief

| | Political FEs | Military FEs | Economic FEs | Social FEs | Information FEs | Infrastructure FEs |
|---|---|---|---|---|---|---|
| Set Conditions | Medium (0.5-0.7) | High (0.8-1.0) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Initial Forced Entry | Medium (0.5-0.7) | High (0.8-1.0) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Decisive Operations | Medium (0.5-0.7) | High (0.8-1.0) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Stability / Reconstruction | Medium (0.5-0.7) | High (0.8-1.0) | Medium (0.5-0.7) | Low (0.2-0.4) | Medium (0.5-0.7) | Medium (0.5-0.7) |

Ground (Army) Planner

| | Political FEs | Military FEs | Economic FEs | Social FEs | Information FEs | Infrastructure FEs |
|---|---|---|---|---|---|---|
| Set Conditions | Nil (0.0) | High (0.8-1.0) | Medium (0.5-0.7) | Medium (0.5-0.7) | High (0.8-1.0) | Medium (0.5-0.7) |
| Initial Forced Entry | Nil (0.0) | High (0.8-1.0) | Medium (0.5-0.7) | Medium (0.5-0.7) | High (0.8-1.0) | Medium (0.5-0.7) |
| Decisive Operations | Nil (0.0) | High (0.8-1.0) | Medium (0.5-0.7) | Medium (0.5-0.7) | High (0.8-1.0) | Medium (0.5-0.7) |
| Stability / Reconstruction | Nil (0.0) | High (0.8-1.0) | Medium (0.5-0.7) | Medium (0.5-0.7) | High (0.8-1.0) | Medium (0.5-0.7) |

Ground (Marines) Planner

| | Political FEs | Military FEs | Economic FEs | Social FEs | Information FEs | Infrastructure FEs |
|---|---|---|---|---|---|---|
| Set Conditions | Nil (0.0) | High (0.8-1.0) | Medium (0.5-0.7) | Medium (0.5-0.7) | High (0.8-1.0) | Medium (0.5-0.7) |
| Initial Forced Entry | Nil (0.0) | High (0.8-1.0) | Medium (0.5-0.7) | Medium (0.5-0.7) | High (0.8-1.0) | Medium (0.5-0.7) |
| Decisive Operations | Nil (0.0) | High (0.8-1.0) | Medium (0.5-0.7) | Medium (0.5-0.7) | High (0.8-1.0) | Medium (0.5-0.7) |
| Stability / Reconstruction | Nil (0.0) | High (0.8-1.0) | Medium (0.5-0.7) | Medium (0.5-0.7) | High (0.8-1.0) | Medium (0.5-0.7) |

Air Planner

| | Political FEs | Military FEs | Economic FEs | Social FEs | Information FEs | Infrastructure FEs |
|---|---|---|---|---|---|---|
| Set Conditions | Nil (0.0) | High (0.8-1.0) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Initial Forced Entry | Nil (0.0) | High (0.8-1.0) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Decisive Operaions | Nil (0.0) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Stability / Recorstruction | Nil (0.0) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) |

Maritime Planner

| | Political FEs | Military FEs | Economic FEs | Social FEs | Information FEs | Infrastructure FEs |
|---|---|---|---|---|---|---|
| Set Conditions | Nil (0.0) | High (0.8-1.0) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Initial Forced Entry | Nil (0.0) | High (0.8-1.0) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Decisive Operaions | Nil (0.0) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Stability / Recorstruction | Nil (0.0) | Medium (0.5-0.7) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) |

Special Operations Planner

| | Political FEs | Military FEs | Economic FEs | Social FEs | Information FEs | Infrastructure FEs |
|---|---|---|---|---|---|---|
| Set Conditions | Medium (0.5-0.7) | High (0.8-1.0) | Medium (0.5-0.7) | High (0.8-1.0) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Initial Forced Entry | Medium (0.5-0.7) | High (0.8-1.0) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Decisive Operaions | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Stability / Recorstruction | High (0.8-1.0) | High (0.8-1.0) | Medium (0.5-0.7) | High (0.8-1.0) | High (0.8-1.0) | High (0.8-1.0) |

Political/Military Planner

| | Political FEs | Military FEs | Economic FEs | Social FEs | Information FEs | Infrastructure FEs |
|---|---|---|---|---|---|---|
| Set Conditions | High (0.8-1.0) | Medium (0.5-0.7) | Low (0.2-0.4) | High (0.8-1.0) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Initial Forced Entry | High (0.8-1.0) | Medium (0.5-0.7) | Low (0.2-0.4) | High (0.8-1.0) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Decisive Operaions | High (0.8-1.0) | Medium (0.5-0.7) | Low (0.2-0.4) | High (0.8-1.0) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Stability / Reconstruction | High (0.8-1.0) | Medium (0.5-0.7) | Low (0.2-0.4) | High (0.8-1.0) | Medium (0.5-0.7) | Medium (0.5-0.7) |

STO Planrer

| | Political FEs | Military FEs | Economic FEs | Social FEs | Information FEs | Infrastructure FEs |
|---|---|---|---|---|---|---|
| Set Conditions | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) |
| Initial Forced Entry | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) |
| Decisive Operaions | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) |
| Stability / Reconstruction | High (0.8-1.0) | High (0.8-1.0) | High (0.8-1.0) | High (0.8-1.0) | High (0.8-1.0) | High (0.8-1.0) |

Operations Law Planner

| | Political FEs | Military FEs | Economic FEs | Social FEs | Information FEs | Infrastructure FEs |
|---|---|---|---|---|---|---|
| Set Conditions | Nil (0.0) | Medium (0.5-0.7) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) |
| Initial Forced Entry | Nil (0.0) | Medium (0.5-0.7) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) |
| Decisive Operaions | Nil (0.0) | Medium (0.5-0.7) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) |
| Stability / Reconstruction | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) |

## Red/Blue Planner

| | Political FEs | Military FEs | Economic FEs | Social FEs | Information FEs | Infrastructure FEs |
|---|---|---|---|---|---|---|
| Set Conditions | Low (0.2-0.4) | High (0.8-1.0) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) |
| Initial Forced Entry | Low (0.2-0.4) | High (0.8-1.0) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) |
| Decisive Operations | Low (0.2-0.4) | High (0.8-1.0) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) |
| Stability / Reconstruction | Low (0.2-0.4) | High (0.8-1.0) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) |

## Force Protection Planner

| | Political FEs | Military FEs | Economic FEs | Social FEs | Information FEs | Infrastructure FEs |
|---|---|---|---|---|---|---|
| Set Conditions | Low (0.2-0.4) | High (0.8-1.0)* | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) | Medium (0.5-0.7)* |
| Initial Forced Entry | Low (0.2-0.4) | High (0.8-1.0)* | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) | Medium (0.5-0.7)* |
| Decisive Operations | Low (0.2-0.4) | High (0.8-1.0)* | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) | Medium (0.5-0.7)* |
| Stability / Reconstruction | Low (0.2-0.4) | High (0.8-1.0)* | Medium (0.5-0.7)* | Low (0.2-0.4) | Low (0.2-0.4) | Medium (0.5-0.7)* |

*Note: Expertise in the military area addresses only knowledge elements related to the protection of facilities

## Deployment Planner

| | Political FEs | Military FEs | Economic FEs | Social FEs | Information FEs | Infrastructure FEs |
|---|---|---|---|---|---|---|
| Set Conditions | Low (0.2-0.4) | High (0.8-1.0)* | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) |
| Initial Forced Entry | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) |
| Decisive Operations | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) |
| Stability / Reconstruction | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) |

*Note: Expertise in the military area addresses only knowledge elements related to the deployment of BLUE forces

## TASK 3-1 IDENTIFY NODE MISSION PACKAGE CLASSES

### Task Description

Task 3-1 continues the construction of focal knowledge within the simulated JTF planning rhythm. The task produces the final level of decomposition of the desired *PMESII Functional Elements* into a set of *Node Mission Package Classes* for each phase of the operational campaign.

### Task Participation

Task 3-1 is led by the *Joint Fires and Effects Working Group* (JFEWG) that is nominally comprised of the following primary actors:

- Effects Assessment Supervisor
- Information Officer Supervisor
- Political/Military Planner
- Red/Blue Planner
- Land Operations Officer
- Air Operations Officer
- Maritime Operations Officer
- Special Operations Officer
- Ground Weaponeer/Targeteer
- Air Weaponeer/Targeteer
- Maritime Weaponeer/Targeteer
- Special Operations Weaponeer/Targeteer

The primary actors engage in an initial execution of Task 3-1. If the number of identified *Node Mission Package Classes* reaches the set threshold level specified in the model, the task is considered completed –otherwise, the task is re-executed after supporting the JFEWG with secondary actors. Secondary actors supporting the JFEWG include

- Operational Net Assessment (ONA) Supervisor
- ONA Effects Analyst
- ONA Network Analyst
- ONA System-of-Systems Analyst (SOSA) – Political
- ONA SOSA – Military
- ONA SOSA – Economic
- ONA SOSA – Social
- ONA SOSA – Information
- ONA SOSA – Infrastructure
- Operations Law Planner
- Force Protection Planner
- Reach-Back Expertise – Political
- Reach-Back Expertise – Military
- Reach-Back Expertise – Economic
- Reach-Back Expertise – Social

- Reach-Back Expertise – Information
- Reach-Back Expertise – Infrastructure

**Area and Level of Staff Expertise**

The following set of tables indicate the areas and levels of knowledge characterizing each of the actors listed as participating in Task 3-1.

## Effects Assessment Supervisor

| | Political NMPs | Military NMPs | Economic NMPs | Social NMPs | Information NMPs | Infrastructure NMPs |
|---|---|---|---|---|---|---|
| Set Conditions | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Initial Forced Entry | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Decisive Operations | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Stability / Reconstruction | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) |

## Information Operations Supervisor

| | Political NMPs | Military NMPs | Economic NMPs | Social NMPs | Information NMPs | Infrastructure NMPs |
|---|---|---|---|---|---|---|
| Set Conditions | Low (0.2-0.4) | Low (0.2-0.4) | Nil (0.0) | Low (0.2-0.4) | Medium (0.5-0.7) | Nil (0.0) |
| Initial Forced Entry | Low (0.2-0.4) | Low (0.2-0.4) | Nil (0.0) | Low (0.2-0.4) | Medium (0.5-0.7) | Nil (0.0) |
| Decisive Operations | Low (0.2-0.4) | Low (0.2-0.4) | Nil (0.0) | Low (0.2-0.4) | Medium (0.5-0.7) | Nil (0.0) |
| Stability / Reconstruction | Low (0.2-0.4) | Low (0.2-0.4) | Nil (0.0) | Low (0.2-0.4) | Medium (0.5-0.7) | Nil (0.0) |

## Political/Military Planner

| | Political NMPs | Military NMPs | Economic NMPs | Social NMPs | Information NMPs | Infrastructure NMPs |
|---|---|---|---|---|---|---|
| Set Conditions | Medium (0.5-0.7) | Medium (0.5-0.7) | Low (0.2-0.4) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Initial Forced Entry | Medium (0.5-0.7) | Medium (0.5-0.7) | Low (0.2-0.4) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Decisive Operations | Medium (0.5-0.7) | Medium (0.5-0.7) | Low (0.2-0.4) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Stability / Reconstruction | Medium (0.5-0.7) | Medium (0.5-0.7) | Low (0.2-0.4) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) |

## Red/Blue Planner

| | Political NMPs | Military NMPs | Economic NMPs | Social NMPs | Information NMPs | Infrastructure NMPs |
|---|---|---|---|---|---|---|
| Set Conditions | Low (0.2-0.4) | Medium (0.5-0.7) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) |
| Initial Forced Entry | Low (0.2-0.4) | Medium (0.5-0.7) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) |
| Decisive Operaions | Low (0.2-0.4) | Medium (0.5-0.7) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) |
| Stability / Recorstruction | Low (0.2-0.4) | Medium (0.5-0.7) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) |

## Ground Operations Officer

| | Political NMPs | Military NMPs | Economic NMPs | Social NMPs | Information NMPs | Infrastructure NMPs |
|---|---|---|---|---|---|---|
| Set Conditions | Nil (0.0) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Initial Forced Entry | Nil (0.0) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Decisive Operaions | Nil (0.0) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Stability / Recorstruction | Nil (0.0) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) |

## Air Operations Officer

| | Political NMPs | Military NMPs | Economic NMPs | Social NMPs | Information NMPs | Infrastructure NMPs |
|---|---|---|---|---|---|---|
| Set Conditions | Nil (0.0) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Initial Forced Entry | Nil (0.0) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Decisive Operaions | Nil (0.0) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Stability / Recorstruction | Nil (0.0) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) |

## Maritime Operations Officer

| | Political NMPs | Military NMPs | Economic NMPs | Social NMPs | Information NMPs | Infrastructure NMPs |
|---|---|---|---|---|---|---|
| Set Conditions | Nil (0.0) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Initial Forced Entry | Nil (0.0) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Decisive Operations | Nil (0.0) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Stability / Reconstruction | Nil (0.0) | Medium (0.5-0.7) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) |

## Special Operations Officer

| | Political NMPs | Military NMPs | Economic NMPs | Social NMPs | Information NMPs | Infrastructure NMPs |
|---|---|---|---|---|---|---|
| Set Conditions | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Initial Forced Entry | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Decisive Operations | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Stability / Reconstruction | High (0.8-1.0) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) |

## Ground Weaponeer/Targeteer

| | Political NMPs | Military NMPs | Economic NMPs | Social NMPs | Information NMPs | Infrastructure NMPs |
|---|---|---|---|---|---|---|
| Set Conditions | Nil (0.0) | High (0.8-1.0) | Nil (0.0) | Nil (0.0) | High (0.8-1.0) | Nil (0.0) |
| Initial Forced Entry | Nil (0.0) | High (0.8-1.0) | Nil (0.0) | Nil (0.0) | High (0.8-1.0) | Nil (0.0) |
| Decisive Operations | Nil (0.0) | High (0.8-1.0) | Nil (0.0) | Nil (0.0) | High (0.8-1.0) | Nil (0.0) |
| Stability / Reconstruction | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) |

## Air Weaponeer/Targeteer

| | Political NMPs | Military NMPs | Economic NMPs | Social NMPs | Information NMPs | Infrastructure NMPs |
|---|---|---|---|---|---|---|
| Set Conditions | Nil (0.0) | High (0.8-1.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) |
| Initial Forced Entry | Nil (0.0) | High (0.8-1.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) |
| Decisive Operations | Nil (0.0) | Medium (0.5-0.7) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) |
| Stability / Reconstruction | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) |

## Maritime Weaponeer/Targeteer

| | Political NMPs | Military NMPs | Economic NMPs | Social NMPs | Information NMPs | Infrastructure NMPs |
|---|---|---|---|---|---|---|
| Set Conditions | Nil (0.0) | High (0.8-1.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) |
| Initial Forced Entry | Nil (0.0) | High (0.8-1.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) |
| Decisive Operations | Nil (0.0) | Medium (0.5-0.7) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) |
| Stability / Reconstruction | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) |

## Special Weaponeer/Targeteer

| | Political NMPs | Military NMPs | Economic NMPs | Social NMPs | Information NMPs | Infrastructure NMPs |
|---|---|---|---|---|---|---|
| Set Conditions | Medium (0.5-0.7) | High (0.8-1.0) | Nil (0.0) | High (0.8-1.0) | Nil (0.0) | Nil (0.0) |
| Initial Forced Entry | Medium (0.5-0.7) | High (0.8-1.0) | Nil (0.0) | Medium (0.5-0.7) | Nil (0.0) | Nil (0.0) |
| Decisive Operations | Medium (0.5-0.7) | Medium (0.5-0.7) | Nil (0.0) | Medium (0.5-0.7) | Nil (0.0) | Nil (0.0) |
| Stability / Reconstruction | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) |

ONA Supervisor

| | Political NMPs | Military NMPs | Economic NMPs | Social NMPs | Information NMPs | Infrastructure NMPs |
|---|---|---|---|---|---|---|
| Set Conditions | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Initial Forced Entry | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Decisive Operations | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Stability / Reconstruction | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) |

ONA Effects Analyst

| | Political NMPs | Military NMPs | Economic NMPs | Social NMPs | Information NMPs | Infrastructure NMPs |
|---|---|---|---|---|---|---|
| Set Conditions | Medium (0.5-0.7) | Medium (0.5-0.7) | High (0.8-1.0) | Medium (0.5-0.7) | High (0.8-1.0) | Medium (0.5-0.7) |
| Initial Forced Entry | Medium (0.5-0.7) | Medium (0.5-0.7) | High (0.8-1.0) | Medium (0.5-0.7) | High (0.8-1.0) | Medium (0.5-0.7) |
| Decisive Operations | Medium (0.5-0.7) | Medium (0.5-0.7) | High (0.8-1.0) | Medium (0.5-0.7) | High (0.8-1.0) | Medium (0.5-0.7) |
| Stability / Reconstruction | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) |

ONA Network Analyst

| | Political NMPs | Military NMPs | Economic NMPs | Social NMPs | Information NMPs | Infrastructure NMPs |
|---|---|---|---|---|---|---|
| Set Conditions | High (0.8-1.0) | Medium (0.5-0.7) | Medium (0.5-0.7) | High (0.8-1.0) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Initial Forced Entry | High (0.8-1.0) | Medium (0.5-0.7) | Medium (0.5-0.7) | High (0.8-1.0) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Decisive Operations | High (0.8-1.0) | Medium (0.5-0.7) | Medium (0.5-0.7) | High (0.8-1.0) | Medium (0.5-0.7) | Medium (0.5-0.7) |
| Stability / Reconstruction | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) |

## ONA SOSA – Political

| | Political NMPs | Military NMPs | Economic NMPs | Social NMPs | Information NMPs | Infrastructure NMPs |
|---|---|---|---|---|---|---|
| Set Conditions | High (0.8-1.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) |
| Initial Forced Entry | High (0.8-1.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) |
| Decisive Operations | High (0.8-1.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) |
| Stability / Reconstruction | Medium (0.5-0.7) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) |

## ONA SOSA – Military

| | Political NMPs | Military NMPs | Economic NMPs | Social NMPs | Information NMPs | Infrastructure NMPs |
|---|---|---|---|---|---|---|
| Set Conditions | Nil (0.0) | High (0.8-1.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) |
| Initial Forced Entry | Nil (0.0) | High (0.8-1.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) |
| Decisive Operations | Nil (0.0) | High (0.8-1.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) |
| Stability / Reconstruction | Nil (0.0) | Medium (0.5-0.7) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) |

## ONA SOSA – Economic

| | Political NMPs | Military NMPs | Economic NMPs | Social NMPs | Information NMPs | Infrastructure NMPs |
|---|---|---|---|---|---|---|
| Set Conditions | Nil (0.0) | Nil (0.0) | High (0.8-1.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) |
| Initial Forced Entry | Nil (0.0) | Nil (0.0) | High (0.8-1.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) |
| Decisive Operations | Nil (0.0) | Nil (0.0) | High (0.8-1.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) |
| Stability / Reconstruction | Nil (0.0) | Nil (0.0) | Medium (0.5-0.7) | Nil (0.0) | Nil (0.0) | Nil (0.0) |

ONA SOSA – Social

| | Political NMPs | Military NMPs | Economic NMPs | Social NMPs | Information NMPs | Infrastructure NMPs |
|---|---|---|---|---|---|---|
| Set Conditions | Nil (0.0) | Nil (0.0) | Nil (0.0) | High (0.8-1.0) | Nil (0.0) | Nil (0.0) |
| Initial Forced Entry | Nil (0.0) | Nil (0.0) | Nil (0.0) | High (0.8-1.0) | Nil (0.0) | Nil (0.0) |
| Decisive Operaions | Nil (0.0) | Nil (0.0) | Nil (0.0) | High (0.8-1.0) | Nil (0.0) | Nil (0.0) |
| Stability / Reconstruction | Nil (0.0) | Nil (0.0) | Nil (0.0) | Medium (0.5-0.7) | Nil (0.0) | Nil (0.0) |

ONA SOSA – Information

| | Political NMPs | Military NMPs | Economic NMPs | Social NMPs | Information NMPs | Infrastructure NMPs |
|---|---|---|---|---|---|---|
| Set Conditions | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | High (0.8-1.0) | Nil (0.0) |
| Initial Forced Entry | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | High (0.8-1.0) | Nil (0.0) |
| Decisive Operaions | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | High (0.8-1.0) | Nil (0.0) |
| Stability / Reconstruction | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Medium (0.5-0.7) | Nil (0.0) |

ONA SOSA – Infrastructure

| | Political NMPs | Military NMPs | Economic NMPs | Social NMPs | Information NMPs | Infrastructure NMPs |
|---|---|---|---|---|---|---|
| Set Conditions | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | High (0.8-1.0) |
| Initial Forced Entry | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | High (0.8-1.0) |
| Decisive Operaions | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | High (0.8-1.0) |
| Stability / Reconstruction | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Medium (0.5-0.7) |

## Operations Law Planner

| | Political NMPs | Military NMPs | Economic NMPs | Social NMPs | Information NMPs | Infrastructure NMPs |
|---|---|---|---|---|---|---|
| Set Conditions | Nil (0.0) | Medium (0.5-0.7) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) |
| Initial Forced Entry | Nil (0.0) | Medium (0.5-0.7) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) |
| Decisive Operations | Nil (0.0) | Medium (0.5-0.7) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) |
| Stability / Reconstruction | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) | Medium (0.5-0.7) |

## Force Protection Planner

| | Political NMPs | Military NMPs | Economic NMPs | Social NMPs | Information NMPs | Infrastructure NMPs |
|---|---|---|---|---|---|---|
| Set Conditions | Low (0.2-0.4) | High (0.8-1.0)* | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) | Medium (0.5-0.7)* |
| Initial Forced Entry | Low (0.2-0.4) | High (0.8-1.0)* | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) | Medium (0.5-0.7)* |
| Decisive Operations | Low (0.2-0.4) | High (0.8-1.0)* | Low (0.2-0.4) | Low (0.2-0.4) | Low (0.2-0.4) | Medium (0.5-0.7)* |
| Stability / Reconstruction | Low (0.2-0.4) | High (0.8-1.0)* | Medium (0.5-0.7)* | Low (0.2-0.4) | Low (0.2-0.4) | Medium (0.5-0.7)* |

*Note: Expertise in the military area addresses only knowledge elements related to the protection of facilities

## ONA SOSA – Political

| | Political NMPs | Military NMPs | Economic NMPs | Social NMPs | Information NMPs | Infrastructure NMPs |
|---|---|---|---|---|---|---|
| Set Conditions | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) |
| Initial Forced Entry | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) |
| Decisive Operations | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) |
| Stability / Reconstruction | High (0.8-1.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) |

## ONA SOSA – Military

| | Political NMPs | Military NMPs | Economic NMPs | Social NMPs | Information NMPs | Infrastructure NMPs |
|---|---|---|---|---|---|---|
| Set Conditions | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) |
| Initial Forced Eitry | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) |
| Decisive Operaions | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) |
| Stability / Recoistruction | Nil (0.0) | High (0.8-1.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) |

## ONA SOSA – Economic

| | Political NMPs | Military NMPs | Economic NMPs | Social NMPs | Information NMPs | Infrastructure NMPs |
|---|---|---|---|---|---|---|
| Set Conditions | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) |
| Initial Forced Eitry | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) |
| Decisive Operaions | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) |
| Stability / Recoistruction | Nil (0.0) | Nil (0.0) | High (0.8-1.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) |

## ONA SOSA – Social

| | Political NMPs | Military NMPs | Economic NMPs | Social NMPs | Information NMPs | Infrastructure NMPs |
|---|---|---|---|---|---|---|
| Set Conditions | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) |
| Initial Forced Eitry | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) |
| Decisive Operaions | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) |
| Stability / Recoistruction | Nil (0.0) | Nil (0.0) | Nil (0.0) | High (0.8-1.0) | Nil (0.0) | Nil (0.0) |

ONA SOSA – Information

| | Political NMPs | Military NMPs | Economic NMPs | Social NMPs | Information NMPs | Infrastructure NMPs |
|---|---|---|---|---|---|---|
| Set Conditions | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) |
| Initial Forced Entry | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) |
| Decisive Operations | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) |
| Stability / Reconstruction | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | High (0.8-1.0) | Nil (0.0) |

ONA SOSA – Infrastructure

| | Political NMPs | Military NMPs | Economic NMPs | Social NMPs | Information NMPs | Infrastructure NMPs |
|---|---|---|---|---|---|---|
| Set Conditions | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) |
| Initial Forced Entry | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) |
| Decisive Operations | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) |
| Stability / Reconstruction | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | Nil (0.0) | High (0.8-1.0) |

## CLASSIFICATION OF KNOWLEDGE ELEMENTS

Each simulated staff actor within the model is characterized in terms of their areas and levels of expertise across the different PMESII dimensions of the battlespace. In order to match this expertise with the specific knowledge elements in the operational scenario, one must first specify the PMESII dimension associated with each knowledge element –*e.g.*, Strategic Endstate, Center of Gravity, etc. It is recognized that some knowledge elements will reflect a combination of two or more PMESII dimensions –*e.g.*, a knowledge element might reflect a battlespace entity that requires both political and social expertise for its recognition. However, in order to simplify the modeling logic, it is assumed that each knowledge element will reflect a key PMESII dimension–*i.e.*, the dimension of expertise thought to be most critical to its recognition—even though it might involve other PMESII dimensions to a lesser extent. The following tables provide a baseline designation for each of the knowledge elements across the four levels phases of the operational scenario and across the four levels of knowledge decomposition.

### Phase 1 – Setting Conditions for Success

*Strategic Endstates*

| NCA Objective | Strategic Endstate | Key Dimension |
|---|---|---|
| Shape Battlespace | Air/Sea Superiority | Military |
| | Persistent ISR | Military |
| | Insurgency Alignment | Military |
| | Capitulation / Neutrality | Political |
| | Population Support | Social |
| | Initial Deployment | Military |
| Regional Diplomacy | Host Nation Agreements | Political |
| | Neutrality Agreements | Political |

*Centers of Gravity*

| Strategic Endstate | Center of Gravity | Key Dimension |
|---|---|---|
| Air/Sea Superiority | Adversary Airpower Systems | Military |
| | Adversary Seapower Systems | Military |
| Persistent ISR | Key Areas of Interest | Military |
| Insurgency Alignment | Internal Insurgency Forces | Military |
| Capitulation / Neutrality | Key Administrative / Military Officials | Political |
| Population Support | Civilian Population | Social |
| Initial Deployment | US / Coalition Forces | Military |
| Host Nation Agreements | Country Green | Political |
| Neutrality Agreements | Country Orange | Political |

*PMESII Functional Elements*

| Center of Gravity | PMESII Functional Element | Key Dimension |
|---|---|---|
| Adversary Airpower Systems | Fighter/Interceptors | Military |
| | Military/Civilian Airfields | Military |
| | Airfield Support Facilities | Military |
| | EW Radar Networks | Military |
| | GCI Radar Networks | Military |
| | SAM Control Radars | Military |
| | SAM Batteries | Military |
| Adversary Seapower Systems | Naval Combatant Ships | Military |
| | Submarines | Military |
| | Littoral Patrol Boats | Military |
| | Military Seaport Docks | Military |
| | Seaport Support Facilities | Military |
| | Paramilitary Sea Threat | Military |
| | Sea Mine Clearance Areas | Military |
| Key Areas of Interest | Regime Leader Residence | Military |
| | Political Party Facilities | Political |
| | Political $C^2$ Network | Political |
| | Regime Financial Network | Economic |
| | WMD Delivery Systems | Military |
| | WMD Stockpiles | Military |
| | Red Military Installations | Military |
| | Red Staging Areas | Military |
| | Red Defensive Positions | Military |
| | Red Approach Routes | Military |
| | Paramilitary Stockpiles | Military |
| | Paramilitary Units | Military |
| | Paramilitary Vehicles | Military |
| | Terrorist Training Camps | Military |
| | Border Infiltration Routes | Military |
| | Ethnic Populations | Social |
| | Refugees/Resettlements | Social |
| | Key Geographic Areas | Social |
| | Regional Media Outlets | Information |
| | Natural Resource Facilities | Economic |
| | Resource Infrastructure | Infrastructure |
| | Technical Workers | Economic |
| Internal Insurgency Forces | Regional Insurgency Cells | Military |
| | Insurgency Leadership | Military |
| Key Admin/Mil Officials | Democratic Leadership | Political |
| | Local Admin Leaders | Political |
| | Key Utility Managers | Infrastructure |
| | Military Leaders | Military |
| Civilian Population | Religious Leaders | Social |
| | Local Tribal Leaders | Social |
| | Key Ethnic Populations | Social |
| US/Coalition Forces | Airmobile Assault Forces | Military |
| | Amphibious Assault Forces | Military |
| | Deception Forces | Military |
| Country Green | Green Minister of Defense | Political |
| | Green Minister of Interior | Political |
| | Green Military Commanders | Military |
| Country Orange | Orange Minister of Defense | Political |
| | Orange Minister of Interior | Political |
| | Orange Military Commanders | Military |

*Node Mission Package Classes*

| PMESII Functional Element | Node Mission Package Class | Key Dimension |
|---|---|---|
| Fighter/Interceptors | Fighter Aircraft Squadron | Military |
| Military/Civilian Airfields | Military Airfield Runway | Military |
| | Civilian Airfield Runway | Military |
| Airfield Support Facilities | Fuel Storage Facility | Military |
| EW Radar Networks | EW Radar Complex | Military |
| GCI Radar Networks | SAM Control Center | Military |
| SAM Control Radars | SAM Control Radar Site | Military |
| SAM Batteries | SAM Launcher Battery | Military |
| Naval Combatant Ships | Naval Ship Group | Military |
| Submarines | Submarine | Military |
| Littoral Patrol Boats | Patrol Boat Group | Military |
| Military Seaport Docks | Military Dock Complex | Military |
| Seaport Support Facilities | Sea Support Facility | Military |
| Paramilitary Sea Threat | Paramilitary Boat Group | Military |
| Sea Mine Clearance Areas | Sea Mine Area | Military |
| Regime Leader Residence | Regime Residence/Bunker | Military |
| Political Party Facilities | Political Party Headquarters | Political |
| | Local Party Office | Political |
| Political $C^2$ Network | Political $C^2$ Node | Political |
| | Alternate Political $C^2$ Node | Political |
| Regime Financial Network | National Financial Net | Economic |
| WMD Delivery Systems | WMD TEL Battery | Military |
| WMD Stockpiles | WMD Storage Facility | Military |
| Red Military Installations | Military Garrison | Military |
| Red Staging Areas | Military Staging Area | Military |
| Red Defensive Positions | Defensive Fortification | Military |
| Red Approach Routes | Key LOC Route | Military |
| Paramilitary Stockpiles | Weapons Cache | Military |
| Paramilitary Units | Paramilitary Cell | Military |
| Paramilitary Vehicles | Paramilitary Vehicle Group | Military |
| Terrorist Training Camps | Training Camp Area | Military |
| Border Infiltration Routes | Infiltration Route | Military |
| Ethnic Populations | Ethnic Neighborhood | Social |
| Refugees/Resettlements | Refugee Camp | Social |
| Key Geographic Areas | Key Urban Area | Social |
| Regional Media Outlets | TV/Radio/Newspaper Media | Information |
| Natural Resource Facilities | Oilfield/Processing Complex | Economic |
| | Key Agriculture Area | Economic |
| Resource Infrastructure | Oil/Gas Pipeline | Infrastructure |
| Technical Workers | Key Worker Group | Economic |
| Regional Insurgency Cells | Insurgency Cell | Military |
| Insurgency Leadership | Key Insurgency Leader | Military |
| Democratic Leadership | Key Parliament Official | Political |
| Local Admin Leaders | City/Town Mayor | Political |
| Key Utility Managers | City Utility Manager | Infrastructure |
| Military Leaders | Military Commander | Military |
| Religious Leaders | Key Cleric Official | Political |
| Local Tribal Leaders | Key Tribal Warlord | Political |
| Key Ethnic Populations | Key Ethnic Region | Political |
| Airmobile Assault Forces | Blue Airmobile Unit | Military |
| Amphibious Assault Forces | Blue Marine Unit | Military |
| Deception Forces | Blue Ground Unit | Military |
| Green Minister of Defense | Overflight Agreement | Political |
| Green Minister of Interior | Transit Agreement | Political |
| | Staging Area Agreement | Political |
| Green Military Commanders | Forces Agreement | Military |
| Orange Minister of Defense | Political Neutrality Agreement | Political |

| | | |
|---|---|---|
| Orange Minister of Interior | Anti-Sanctuary Agreement | Political |
| Orange Military Commanders | Mil Neutrality Agreement | Military |

## Phase 2 – Initial Forced Entry

*Strategic Endstates*

| NCA Objective | Strategic Endstate | Key Dimension |
|---|---|---|
| Conduct Deception Campaign | Fix Adversary Forces | Military |
| Conduct Initial Forced Entry | Air/Sea Superiority | Military |
| | Persistent ISR | Military |
| | Eliminate WMD Threat | Military |
| | Degrade Regime Leadership | Military |
| | Conduct Amphibious Assault | Military |
| | Conduct Airmobile Assault | Military |
| | Build Insurgency Axis | Military |
| Set Conditions for Stability & Reconstruction | Key Leader Capitulation | Political |
| | Build Population Support | Social |
| | Build Humanitarian Base | Military |
| | Protect National Resources | Military |
| | Protect Minority Population | Military |

*Centers of Gravity*

| Strategic Endstate | Center of Gravity | Key Dimension |
|---|---|---|
| Fix Adversary Forces | Eastern Surveillance | Military |
| | Eastern Combat Divisions | Military |
| | Eastern Advance Routes | Military |
| Air/Sea Superiority | Adversary Airpower Systems | Military |
| | Adversary Seapower Systems | Military |
| Persistent ISR | Key Areas of Interest | Military |
| Eliminate WMD Threat | WMD Stockpiles / Delivery Sys | Military |
| Degrade Regime Leadership | Top Regime Leadership | Military |
| Conduct Amphibious Assault | Western Border Defenses | Military |
| | Western Security Forces | Military |
| | Western Paramilitary | Military |
| Conduct Airmobile Assault | Key Airfield Defenses | Military |
| | Southern Paramilitary | Military |
| Build Insurgency Axis | Capital Area Paramilitary | Military |
| Key Leader Capitulation | Western / Southern Leaders | Political |
| Build Population Support | Cultural / Religious Support | Social |
| | Key Traffic Routes | Social |
| Build Humanitarian Base | Country Green Staging Areas | Military |
| Protect National Resources | Resource Infrastructure | Military |
| Protect Minority Population | Ethnic Neighborhoods | Military |

*PMESII Functional Elements*

| Center of Gravity | PMESII Functional Element | Key Dimension |
|---|---|---|
| Eastern Surveillance | Long Range Surveillance | Military |
| | Tactical Reconnaissance | Military |
| Eastern Combat Divisions | Assembly Areas / Defensive Positions | Military |
| Eastern Advance Routes | Border Civilian Population | Military |
| Adversary Airpower Systems | Fighter/Interceptors | Military |
| | Military / Civilian Airfields | Military |
| | Airfield Support Facilities | Military |
| | EW Radar Networks | Military |
| | GCI Radar Networks | Military |
| | SAM Control Radars | Military |

| | | |
|---|---|---|
| | SAM Batteries | Military |
| Adversary Seapower Systems | Naval Combatant Ships | Military |
| | Submarines | Military |
| | Littoral Patrol Boats | Military |
| | Military Seaport Docks | Military |
| | Seaport Support Facilities | Military |
| | Paramilitary Sea Threat | Military |
| | Sea Mine Clearance Areas | Military |
| Key Areas of Interest | Red Military Installations | Military |
| | Red Staging Areas | Military |
| | Red Defensive Positions | Military |
| | Red Approach Routes | Military |
| | Paramilitary Stockpiles | Military |
| | Paramilitary Units | Military |
| | Paramilitary Vehicles | Military |
| | Terrorist Training Camps | Military |
| | Border Infiltration Routes | Military |
| WMD Stockpiles / Delivery Sys | WMD Delivery Systems | Military |
| | WMD Stockpiles | Military |
| Top Regime Leadership | Regime Leader Residence | Military |
| | Political Party Facilities | Political |
| | Political $C^2$ Network | Political |
| | Regime Financial Network | Economic |
| Western Border Defenses | Physical Defenses | Military |
| Western Security Forces | Conscript Military Units | Military |
| Western Paramilitary | West Paramilitary Stockpiles | Military |
| | West Paramilitary Units | Military |
| | West Paramilitary Vehicles | Military |
| Key Airfield Defenses | Elite Security Units | Military |
| Southern Paramilitary | South Paramilitary Stockpiles | Military |
| | South Paramilitary Units | Military |
| | South Paramilitary Vehicles | Military |
| Capital Area Paramilitary | Capital Paramilitary Stockpiles | Military |
| | Capital Paramilitary Units | Military |
| | Capital Paramilitary Vehicles | Military |
| Western / Southern Leaders | Ministry/Parliament Leaders | Political |
| | City/Town Mayors | Political |
| | City/Town Utility Managers | Infrastructure |
| | Military Commanders | Military |
| Cultural / Religious Support | Key Religious Leaders | Social |
| | Clan/Tribal Leaders | Social |
| Key Traffic Routes | Key Route Population | Social |
| Country Green Staging Areas | Humanitarian Stockpiles | Military |
| | Staging Areas | Military |
| Resource Infrastructure | Oil / Mine / Agriculture Facilities | Economic |
| | Pipelines / Transport Sys | Infrastructure |
| | Technician / Worker Groups | Economic |
| | Paramilitary Units | Military |
| | Paramilitary Vehicles | Military |
| Ethnic Neighborhoods | Paramilitary Units | Military |
| | Paramilitary Vehicles | Military |

## *Node Mission Package Classes*

| PMESII Functional Element | Node Mission Package Class | Key Dimension |
|---|---|---|
| Long Range Surveillance | Long Range Surveillance Site | Military |
| Tactical Reconnaissance | Tactical Reconnaissance Site | Military |
| Assembly Areas / Defensive Positions | Ground Combat Division | Military |
| Border Civilian Population | Border Route Civilian Area | Military |
| Fighter/Interceptors | Fighter Aircraft Squadron | Military |

| | | |
|---|---|---|
| Military / Civilian Airfields | Military Airfield Runway | Military |
| | Civilian Airfield Runway | Military |
| Airfield Support Facilities | Fuel Storage Facility | Military |
| EW Radar Networks | EW Radar Complex | Military |
| GCI Radar Networks | SAM Control Center | Military |
| SAM Control Radars | SAM Control Radar Site | Military |
| SAM Batteries | SAM Launcher Battery | Military |
| Naval Combatant Ships | Naval Ship Group | Military |
| Submarines | Submarine | Military |
| Littoral Patrol Boats | Patrol Boat Group | Military |
| Military Seaport Docks | Military Dock Complex | Military |
| Seaport Support Facilities | Sea Support Facility | Military |
| Paramilitary Sea Threat | Paramilitary Boat Group | Military |
| Sea Mine Clearance Areas | Sea Mine Area | Military |
| Red Military Installations | Military Garrison | Military |
| Red Staging Areas | Military Staging Area | Military |
| Red Defensive Positions | Defensive Fortification | Military |
| Red Approach Routes | Key LOC Route | Military |
| Paramilitary Stockpiles | Weapons Cache | Military |
| Paramilitary Units | Paramilitary Cell | Military |
| Paramilitary Vehicles | Paramilitary Vehicle Group | Military |
| Terrorist Training Camps | Training Camp Area | Military |
| Border Infiltration Routes | Infiltration Route | Military |
| WMD Delivery Systems | WMD TEL Battery | Military |
| WMD Stockpiles | WMD Storage Facility | Military |
| Regime Leader Residence | Regime Residence / Bunker | Military |
| Political Party Facilities | Political Party Headquarters | Political |
| | Local Party Office | Political |
| Political $C^2$ Network | Political $C^2$ Node | Military |
| | Alternate Political $C^2$ Node | Military |
| Regime Financial Network | National Financial Net | Economic |
| Physical Defenses | Physical Impediments | Military |
| Conscript Military Units | Military Conscript Company | Military |
| West Paramilitary Stockpiles | Weapons Cache | Military |
| West Paramilitary Units | Paramilitary Cell | Military |
| West Paramilitary Vehicles | Paramilitary Vehicle Group | Military |
| Elite Security Units | Elite Security Company | Military |
| South Paramilitary Stockpiles | Weapons Cache | Military |
| South Paramilitary Units | Paramilitary Cell | Military |
| South Paramilitary Vehicles | Paramilitary Vehicle Group | Military |
| Capital Paramilitary Stockpiles | Weapons Cache | Military |
| Capital Paramilitary Units | Paramilitary Cell | Military |
| Capital Paramilitary Vehicles | Paramilitary Vehicle Group | Military |
| Ministry/Parliament Leaders | Ministry/Parliament Leader | Political |
| City/Town Mayors | City/Town Mayor | Political |
| City/Town Utility Managers | City/Town Utility Manager | Infrastructure |
| Military Commanders | Military Commander | Military |
| Key Religious Leaders | Key Cleric or Religious Leader | Social |
| Clan/Tribal Leaders | Clan Chief / Warlord | Social |
| Key Route Population | Local Route Neighborhood | Social |
| Humanitarian Stockpiles | Relief Supply Load | Military |
| Staging Areas | Staging Site | Military |
| Oil / Mine / Agriculture Facilities | Oilfield, Mine or Crop Field | Economic |
| Pipelines / Transport Sys | Pipeline or Trans Facility | Infrastructure |
| Technician / Worker Groups | Local Technician Group | Economic |
| Paramilitary Units | Paramilitary Cell | Military |
| Paramilitary Vehicles | Paramilitary Vehicle Group | Military |
| Paramilitary Units | Paramilitary Cell | Military |
| Paramilitary Vehicles | Paramilitary Vehicle Group | Military |

## Phase 3 – Decisive Operations

### *Strategic Endstates*

| NCA Objective | Strategic Endstate | Key Dimension |
|---|---|---|
| Eliminate WMD Capability | WMD Under Positive Control | Military |
| Eliminate Regime Power | Regime Leaders Neutralized | Military |
| | Regime Party Neutralized | Military |
| Neutralize Combat Divisions | Divisions Capitulate / Destroyed | Military |
| Secure Natural Resources | Protect National Resources | Military |
| Protect / Sustain Civilians | Keep Population in Homes | Social |
| | Humanitarian Relief | Military |
| | Protect Minority Population | Military |
| Establish Law and Order | Destroy Terrorist Base | Military |
| | Stop Foreign Infiltrators | Military |
| | Apprehend Criminals | Military |
| Protect Coalition Logistics | Protect Convoys / Assembly Areas | Military |

### *Centers of Gravity*

| Strategic Endstate | Center of Gravity | Key Dimension |
|---|---|---|
| WMD Under Positive Control | WMD Stockpiles / Delivery | Military |
| | WMD Labs / Production | Military |
| Regime Leaders Neutralized | Key Regime Leaders | Military |
| Regime Party Neutralized | Political / Financial Networks | Military |
| | Capital Area Paramilitary | Military |
| Divisions Capitulate / Destroyed | Capitulating Divisions | Military |
| | Resisting Divisions | Military |
| Protect National Resources | Resource Infrastructure | Military |
| Keep Population in Homes | Key Population Leaders | Social |
| | Civilian Refuge Traffic | Social |
| Humanitarian Relief | Distribution Relief Areas | Military |
| Protect Minority Population | Ethnic Neighborhoods | Military |
| Destroy Terrorist Base | Terrorist Operations | Military |
| Stop Foreign Infiltrators | Foreign Infiltration Cells | Military |
| Apprehend Criminals | Criminal Networks | Military |
| Protect Convoys / Assembly Areas | Coalition Supply Convoys | Military |
| | Coalition Assembly Areas | Military |

### *PMESII Functional Elements*

| Center of Gravity | PMESII Functional Element | Key Dimension |
|---|---|---|
| WMD Stockpiles / Delivery | WMD Transporter/Erector/Launchers | Military |
| | WMD Storage / Assembly | Military |
| WMD Labs / Production | WMD Research Labs / Plants | Military |
| Key Regime Leaders | Key Regime Leaders | Military |
| | Regime Residences / Bunkers | Military |
| Political / Financial Networks | Political Party Facilities | Political |
| | Regime Financial Networks | Economic |
| Capital Area Paramilitary | Paramilitary Cells | Military |
| Capitulating Divisions | Division Leadership | Military |
| | Division Equipment | Military |
| | Division Troops | Military |
| | Disrupting Paramilitary Units | Military |
| | Disrupting Paramilitary Vehicles | Military |
| Resisting Divisions | Division Leadership | Military |
| | Division Equipment | Military |
| | Division Troops | Military |
| Resource Infrastructure | Oil / Mine / Agriculture Facilities | Economic |
| | Pipelines / Transport Sys | Infrastructure |
| | Technician / Worker Groups | Economic |

| | | |
|---|---|---|
| | Paramilitary Units | Military |
| | Paramilitary Vehicles | Military |
| Key Population Leaders | Cultural / Religious Leaders | Social |
| | Clan/Tribal Leaders | Social |
| Civilian Refuge Traffic | Key Route Population | Social |
| Distribution Relief Areas | Relief Supplies | Military |
| | Distribution Sites | Military |
| | Paramilitary Units | Military |
| | Paramilitary Vehicles | Military |
| Ethnic Neighborhoods | Paramilitary Units | Military |
| | Paramilitary Vehicles | Military |
| Terrorist Operations | Training Camps | Military |
| | Terrorist Bunkers | Military |
| | Terrorist Personnel | Military |
| Foreign Infiltration Cells | Terrorist Personnel | Military |
| Criminal Networks | Criminal Personnel | Military |
| Coalition Supply Convoys | Convoy Security | Military |
| | Paramilitary Units | Military |
| | Paramilitary Vehicles | Military |
| | Terrorist Cells | Military |
| Coalition Assembly Areas | Assembly Area Security | Military |
| | Paramilitary Units | Military |
| | Paramilitary Vehicles | Military |
| | Terrorist Cells | Military |

*Node Mission Package Classes*

| **PMESII Functional Element** | **Node Mission Package Class** | **Key Dimension** |
|---|---|---|
| WMD Transported/Erector/Launchers | WMD Transporter/Erector/Launcher Battery | Military |
| WMD Storage / Assembly | WMD Storage Facility | Military |
| WMD Research Labs / Plants | WMD Lab or Plant | Military |
| Key Regime Leaders | Regime Official | Military |
| Regime Residences / Bunkers | Residence or Bunker | Military |
| Political Party Facilities | Political Party Headquarters | Political |
| | Local Party Office | Political |
| Regime Financial Networks | National Financial Net | Economic |
| Paramilitary Cells | Paramilitary Cell | Military |
| Division Leadership | Division Commander | Military |
| Division Equipment | Vehicle Assembly Area | Military |
| Division Troops | Local Area Troops | Military |
| Disrupting Paramilitary Units | Paramilitary Cell | Military |
| Disrupting Paramilitary Vehicles | Paramilitary Vehicle Group | Military |
| Division Leadership | Division Leaders | Military |
| Division Equipment | Combat Vehicle Group | Military |
| | Support Vehicle Group | Military |
| Division Troops | Combat Company | Military |
| Oil / Mine / Agriculture Facilities | Oilfield, Mine or Crop Field | Economic |
| Pipelines / Transport Sys | Pipeline or Trans Facility | Infrastructure |
| Technician / Worker Groups | Local Technician Group | Economic |
| Paramilitary Units | Paramilitary Cell | Military |
| Paramilitary Vehicles | Paramilitary Vehicle Group | Military |
| Cultural / Religious Leaders | Key Cleric or Religious Leader | Social |
| Clan/Tribal Leaders | Clan Chief / Warlord | Social |
| Key Route Population | Local Route Neighborhood | Social |
| Relief Supplies | Relief Supply Load | Military |
| Distribution Sites | Distribution Site | Military |
| Paramilitary Units | Paramilitary Cell | Military |
| Paramilitary Vehicles | Paramilitary Vehicle Group | Military |
| Paramilitary Units | Paramilitary Cell | Military |
| Paramilitary Vehicles | Paramilitary Vehicle Group | Military |

| | | |
|---|---|---|
| Training Camps | Training Facility | Military |
| Terrorist Bunkers | Bunker Complex | Military |
| Terrorist Personnel | Terrorist Cell | Military |
| Terrorist Personnel | Terrorist Cell | Military |
| Criminal Personnel | Criminal Cell | Military |
| Convoy Security | Convoy Overwatch Route | Military |
| Paramilitary Units | Paramilitary Cell | Military |
| Paramilitary Vehicles | Paramilitary Vehicle Group | Military |
| Terrorist Cells | Terrorist Cells | Military |
| Assembly Area Security | Assembly Area Perimeter | Military |
| Paramilitary Units | Paramilitary Cell | Military |
| Paramilitary Vehicles | Paramilitary Vehicle Group | Military |
| Terrorist Cells | Terrorist Cell | Military |

## Phase 4 – Stability and Reconstruction

*Strategic Endstates*

| NCA Objective | Strategic Endstate | Key Dimension |
|---|---|---|
| Defeat Violent Spoilers | Isolate / Defeat Spoilers | Military |
| Co-opt Nonviolent Spoilers | Restrain Disruption Agents | Political |
| Establish Next State Conditions | Civil Law and Order | Infrastructure |
| | Public Infrastructure | Infrastructure |
| | Public Health Services | Infrastructure |
| | Internal Security Forces | Military |
| International Support | Economic Development Aid | Economic |
| | PVO/NGO Synchronization | Political |

*Centers of Gravity*

| Strategic Endstate | Center of Gravity | Key Dimension |
|---|---|---|
| Isolate / Defeat Spoilers | Neighborhood Intelligence | Military |
| | Operating Spoiler Cells | Military |
| | Insurgency Attack Cells | Military |
| Restrain Disruption Agents | Ethnic Communication | Political |
| | Spoiler Organizations | Political |
| | Major Disruption Sites | Military |
| Civil Law and Order | Civil Administration | Infrastructure |
| | National Police Force | Military |
| Public Infrastructure | Electricity / Water / Sewage | Infrastructure |
| | Information Networks | Infrastructure |
| | Public Education | Infrastructure |
| | Transportation Networks | Infrastructure |
| Public Health Services | Public Health Systems | Infrastructure |
| Internal Security Forces | National Military Forces | Military |
| Economic Development Aid | Key Economic Sectors | Economic |
| PVO/NGO Synchronization | PVO / NGO Organizations | Political |

*PMESII Functional Elements*

| Center of Gravity | PMESII Functional Element | Key Dimension |
|---|---|---|
| Neighborhood Intelligence | Ethnic Leader Cooperation | Military |
| | Media Outlets | Information |
| Operating Spoiler Cells | Terrorist Leadership | Military |
| | Terrorist Cells | Military |
| | Terrorist Weapons Cache | Military |
| | Terrorist Support Networks | Military |
| Insurgency Attack Cells | IED Consequence Management | Military |
| | Civil Population Support | Social |
| | Media Outlets | Information |

| | | |
|---|---|---|
| Ethnic Communication | Community Leader Dialog | Political |
| | Media Outlets | Information |
| Spoiler Organizations | Spoiler Org Leadership | Political |
| | Spoiler Org Agents | Military |
| | Spoiler Org Followers | Social |
| | Media Outlets | Information |
| Major Disruption Sites | Protest Consequence Management | Military |
| | Civil Population Support | Social |
| | Media Outlets | Information |
| Civil Administration | Civil Administrative Functions | Infrastructure |
| | National/Local Elections | Military |
| | Media Outlets | Information |
| | Admin Office Security | Military |
| National Police Force | Recruit Police Personnel | Military |
| | Police Training Program | Military |
| | Media Outlets | Information |
| Electricity / Water / Sewage | Electric Power Networks | Infrastructure |
| | Water / Sewage Treatment | Infrastructure |
| | Media Outlets | Information |
| | Utility Systems Security | Military |
| Information Networks | Telephone / Internet Grid | Infrastructure |
| | Broadcast Media Centers | Infrastructure |
| | Media Outlets | Information |
| | Communications Security | Military |
| Public Education | Local School Facilities | Infrastructure |
| | Media Outlets | Information |
| Transportation Networks | Key Bridges | Infrastructure |
| | Key Roadways | Infrastructure |
| | Key Rail Lines | Infrastructure |
| | Media Outlets | Information |
| | Transport System Security | Military |
| Public Health Systems | Hospitals / Clinics | Infrastructure |
| | Medical Stockpiles | Infrastructure |
| | Media Outlets | Information |
| National Military Forces | Key Military Leadership | Military |
| | NCO / Enlisted Personnel | Military |
| | Military Training Program | Military |
| | Military Equipment | Military |
| | Media Outlets | Information |
| Key Economic Sectors | Economic Aid Agreements | Economic |
| | Econ Development Projects | Economic |
| | Contractor Protection | Economic |
| | Media Outlets | Information |
| PVO / NGO Organizations | PVO/NGO Projects | Political |
| | PVO/NGO Protection | Military |
| | Media Outlets | Information |

*Node Mission Package Classes*

| **PMESII Functional Element** | **Node Mission Package Class** | **Key Dimension** |
|---|---|---|
| Ethnic Leader Cooperation | Local Community Leader | Military |
| Media Outlets | TV/Radio/Newspaper Office | Information |
| Terrorist Leadership | Terrorist Cell Leader | Military |
| Terrorist Cells | Terrorist Cell | Military |
| Terrorist Weapons Cache | Weapons Cache | Military |
| Terrorist Support Networks | Support Network | Military |
| IED Consequence Management | Medical Injury Site | Military |
| | Facility Damage Site | Infrastructure |
| Civil Population Support | Local Neighborhood | Social |
| Media Outlets | TV/Radio/Newspaper Office | Information |

| | | |
|---|---|---|
| Community Leader Dialog | Local Community Leader | Political |
| Media Outlets | TV/Radio/Newspaper Office | Information |
| Spoiler Org Leadership | Spoiler Org Leader | Political |
| Spoiler Org Agents | Local Spoiler Org Cell | Military |
| Spoiler Org Followers | Local Neighborhood Areas | Social |
| Media Outlets | TV/Radio/Newspaper Office | Information |
| Protest Consequence Management | Medical Injury Site | Military |
| | Facility Damage Site | Infrastructure |
| Civil Population Support | Local Neighborhood | Social |
| Media Outlets | TV/Radio/Newspaper Office | Information |
| Civil Administrative Functions | Local Admin Office | Infrastructure |
| | Admin Official Vetting | Military |
| National/Local Elections | Election Event | Military |
| Media Outlets | TV/Radio/Newspaper Office | Information |
| Admin Office Security | Area Security Site | Military |
| Recruit Police Personnel | Recruitment Program | Military |
| Police Training Program | Police Training Facility | Military |
| | Training Program Delivery | Military |
| Media Outlets | TV/Radio/Newspaper Office | Information |
| Electric Power Networks | Electric Power Facility | Infrastructure |
| Water / Sewage Treatment | Water / Sewer Facility | Infrastructure |
| Media Outlets | TV/Radio/Newspaper Office | Information |
| Utility Systems Security | Area Security Site | Military |
| Telephone / Internet Grid | Communications Facility | Infrastructure |
| Broadcast Media Centers | Media Center Facility | Infrastructure |
| Media Outlets | TV/Radio/Newspaper Office | Information |
| Communications Security | Area Security Site | Military |
| Local School Facilities | School Building | Infrastructure |
| Media Outlets | TV/Radio/Newspaper Office | Information |
| Key Bridges | Bridge | Infrastructure |
| Key Roadways | Roadway | Infrastructure |
| Key Rail Lines | Rail Line | Infrastructure |
| Media Outlets | TV/Radio/Newspaper Office | Information |
| Transport System Security | Area Security Site | Military |
| Hospitals / Clinics | Hospital or Clinic | Infrastructure |
| Medical Stockpiles | Medical Supply Load | Infrastructure |
| Media Outlets | TV/Radio/Newspaper Office | Information |
| Key Military Leadership | Military Officer Vetting | Military |
| NCO / Enlisted Personnel | NCO / Enlisted Vetting | Military |
| Military Training Program | Military Training Facility | Military |
| | Training Program Delivery | Military |
| Military Equipment | Combat Vehicle Group | Military |
| | Soldier Equipment Group | Military |
| Media Outlets | TV/Radio/Newspaper Office | Information |
| Economic Aid Agreements | Aid / Monetary Agreement | Economic |
| Econ Development Projects | Project Coordination | Economic |
| Contractor Protection | Area Security Site | Economic |
| Media Outlets | TV/Radio/Newspaper Office | Information |
| PVO/NGO Projects | Project Coordination | Political |
| PVO/NGO Protection | Area Security Site | Military |
| Media Outlets | TV/Radio/Newspaper Office | Information |